Fifteenth Year of Publication

Industrial FINISHING

Reg. U. S. Pat. Office

Devoted to Product Finishing in the Factory

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Contents of this Issue

Letters from Readers of Industrial Finishing 5
How to Use Masking Tape in Aircraft Painting 10
Finishing Oak Chairs in School Furniture Brown, Walnut Mahogany 16
Why It Is Important to Measure and Control Your Viscosity .. 18
How We Discovered and Reduced Our Waste in Spray Finishing 25
Pearl Essence Finishes 27
Railway Car Painting 30
The Production Finishing of Wire Screen Cloth 38
New Materials, Supplies, Equipment 48
Questions; Answers 54
Editorial 66

Automotive Development Through Chemistry 15
Represents Maas & Waldstein Co. in Upper N. Y. 15
Electric Heaters 17
David Andrew Becomes President of Ferbert-Schorndorfer Co. 29
Bulletin on Air-Motored Agitators 29
Solvents; Alcohols 36
DuPont Men Take in The Golden Gate Exposition 36
Eclipse Air Brush Co. Appoints 36
Book of Aluminum Painting 59
Two Chemists 52
Lea Mfg. Co., Distributor of Platers' Drying Material 59
J. P. Brown & Co. Move 60
Stanley Chemical Co. Appoints Ohio Representative 65
Fire Prevention Bulletins 65
Los Angeles Furniture Market June 19 to 24 69
Aircraft Finishing Book 69
LeVallee to Visit Representatives .. 69
Detroit Rex Products Co. Adds Sheet Metal Division 69
New Method of Applying Lacquer Reduces Finishing Costs 70
V. J. Dolan Reports Improved Business After Southern Trip 70

"Classified Advertising" Section 70
Advertisers' Index 72

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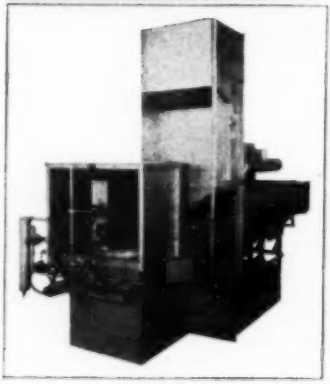

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Letters from Readers

OF INDUSTRIAL FINISHING

These letters (and many others) were answered recently by the editorial department, but are published here to reveal certain interesting trends of desire and activity in the industry, and to encourage additional inquiries, comments and suggestions. Further information about any of them can be obtained by writing this office.—Editor.

Infra-Red Lamps for Drying

I am interested in the use of infra-red lamps on baking enamels. It is my understanding that the Ford Motor Co. is using this process and I am interested in the manufacturers of lamps or anyone who can give me information relative to the procedure used.—E. Varnish Co.

See the article on this subject beginning on page 44 of March issue of INDUSTRIAL FINISHING. The lamps are manufactured and supplied by North American Electric Lamp Co., 1014 Tyler St., St. Louis, Mo.—ED.

Bake Ovens

We are interested in securing technical information regarding the construction and use of bake ovens. We will appreciate your letting us know where we can secure such information—whether there are text books available on the subject, etc.—P. & L. Co.

Grained Transfers

We would appreciate you forwarding us a list of manufacturers of grained transfers similar to the line manufactured by the Meyercord Co. of Chicago.

To be a little more explicit, facsimiles of the grains of different woods are made in sheets. These may be cemented to a wood, metal or other types of surfaces and finished over, thereby making it possible to get any desired wood grain appearance on practically any surface. We believe the manufacturers of this type of material either are, or have been, advertisers in your publication. If this is true and you can help us establish contact with several such people, we will appreciate it greatly.—C. & U. Inc. (Lacquers, Paints and Varnishes).

Names of companies have been forwarded to this inquirer.—ED.

Hollow-Air Atomizer Heads

Please send us all the general information that you may have at your disposal concerning hollow-air atomizer heads.—I. M. Co. (Caskets, Vaults).

Transparent Finishes

Your February 1939 issue gave the address of the "Amiglaze Co. Inc." as "New York, N. Y." I have written to this address, but the letter was returned stamped by the New York Post Office "Not in directory; Incomplete address." Would it be possible for you to send us the complete address of the Amiglaze Co., Inc.?

If you do not have the complete address of this concern, please send

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us the complete names and addresses of manufacturers who make stains or varnishes that have transparent colors—that are unaffected by weather or sun.

We would appreciate any other information you could give us concerning a stain or varnish that could be used for staining glass.—G. A. L. (Art-Stained and Leaded Glass).

We have no other or more complete address on the Amiglaze Co., Inc., but are sending you names and addresses of other concerns that can probably supply what you want.—Ed.

Luminous Paint

In February issue of INDUSTRIAL FINISHING, on page 86, you publish a letter from a firm regarding sources of supply for self-luminous or phosphorescent paints. We are in search of a like material for use on small wood knobs to be used on pull chains or pull strings, so as to locate them in the dark. Please advise us the names and the addresses of manufacturers of same.

Information has been supplied.—Ed.

We wish to inform you that we get much valuable information from your magazine, and are especially interested in the Review of New Machines and Products on the market (which appeared in January and February issues). The magazine is passed through our Research Department, our Coating Department, and is read by ten or twelve members of our organization. We all agree that it is a fine publication.—H. P. Co. (President).

Metal Cleaning Notes

On page 15 of the February issue of your publication, there is an article by W. R. Allen, entitled "Metal Cleaning Notes."

We were particularly attracted to this article because we have a perpetual problem of maintaining the metal finish of bronze corner bars, etc., to our many store fronts. The problem seems to be one of periodically removing the old lacquered protection surface, polishing the

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CLEVELAND, O.

metal and then re-lacquering. We have had a chemical formula developed which removes the old finish, but this requires considerable time. It is our desire to find a product that will do the removing and finishing in a more economical manner.

If you have developed any data in this connection, will you send us full particulars or references?—M. B. C.

On page 15 of the February issue of INDUSTRIAL FINISHING, there is an article entitled "Metal Cleaning Notes" by Mr. W. R. Allen. We are wondering if you could put us in touch with Mr. Allen, as we would very much like to contact him?—R. G. Co.

Briar Pipe Finish

I am trying to locate a finish suitable for the finishing of briar wood smoking pipes. If you have the names and addresses of firms making such a finish, I would appreciate your giving me their names and addresses, or have them write me. Do you know of any publication devoted to the manufacture of briar wood smoking pipes?—R. A. (Cahow Dry Pipe).

Paint Formulas

We are interested in securing formulas for the making of barrel paints, barn paints and asphaltum paints. Also, aluminum paint vehicles. If you could supply us with these formulas, we would appreciate a reply from you.—E. O. Co. (Paints).

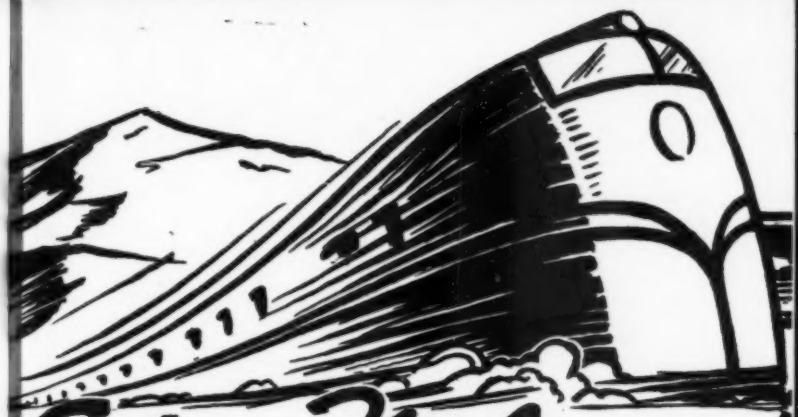
We do not supply paint formulas, but hundreds of such formulas are given in Vol. IV of "The Chemical Formulary," a new 600-page book which we sell for only $6.00.—ED.

Enamel for Metal

We would like to standardize on a type of enamel to use on one of our regular products. The enamel should have the following characteristics:

1) Good adhesion to bare metal.
2) Sufficient body to cover with one coat.
3) Dry dust free in approximately 15 minutes, and to receive the decalcomania or striping within one hour.
4) Enamel should become hard enough, after drying overnight, to

(Continued on page 61)



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How to Use Masking Tape in

MASKING TAPE is today a big item in the lettering and decorative finishing of airplanes. When I started in the aircraft finishing line the use of masking tape was still in its infancy. The insignia, letters, license numbers and decorations were practically all put on freehand. This called for skilled sign painters. Came then the change to faster-drying materials—dopes and lacquers—and with them the use of masking tape.

The insignia stars which we painted on the U. S. Army and Navy wings had to be just about perfect—blue back-ground, white star and red center, as shown in Fig. 2. When we first began to use masking tape we applied these insignia colors by brushing. We made a pattern of heavy paper or some light sheet metal, as they were all the same size on each ship. After we had established the proper location, the outer circle was marked off and a piece of 1-in. masking tape was carefully laid around the outside of this mark. We were particularly careful to rub down the inner edge where there might be any chance of the color creeping under the tape. Then two coats of white dope or lacquer were brushed over the entire surface. As soon as this was dry the pattern was laid in position and the star and inner circle were marked off.

The inside edges of the star were masked with 1-in. tape, the points being trimmed with a pair of scissors. Then we carefully laid one piece of ½-in. tape around the inner circle. The background was now ready for the blue color, and the inner taped circle was ready to be painted red. Two coats of blue and two coats of red were brushed in their respective

BY PHILIP LIBERATORE

Fig. 1—Wing of small commercial 'plane masked for spraying the license number.

...in Aircraft Painting...

places. I would wait a few minutes and then carefully remove the tape before the lacquer colors had set. This gave me smooth clean-cut edges. It eliminated the danger of the lacquer forming a solid dry film over the tape and possibly peeling or lifting at the edges as the tape was being removed.

Taping Star Insignia For Spraying

Now nearly all airplane wings are made of metal, and to make a good job everything is sprayed—which calls for more masking. I use the same procedure as before, except that the white must be masked in solid while the blue is being sprayed; and both the blue and white have to be covered while we spray the red center. To save time and material in masking the outside, I have made up several slip covers of light fabric which can be pulled over the ends of the wings. A circular opening is cut in each slip cover for the large circle around the star insignia.

A satisfactory workman can mask and spray an average of six complete stars a day if he uses fast-drying material. On fabric wings I have often done as many as eight stars in a day, using the brush method. Nearly everyone in the finishing department can paint these stars now, therefore it doesn't leave us dependent on any two or three individuals, as in the old days of freehand painting.

Taping 10-in. Lettering

In the illustration marked Fig. 3, I have laid out the letters U. S. NAVY 10-in. high on the side of a 'plane. I marked this from a pattern and then covered the entire side of the 'plane with a large

Fig. 2—The insignia on U. S. Military aircraft.

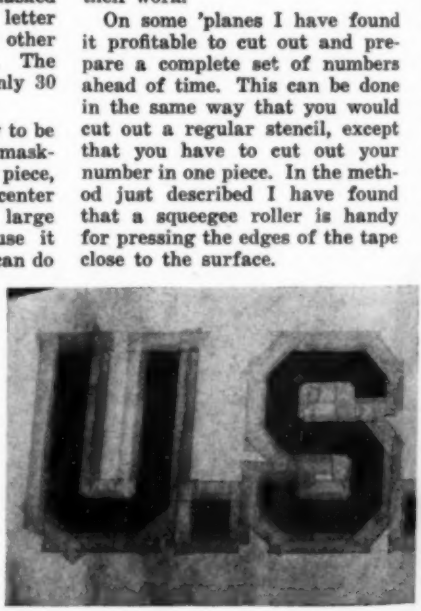
sheet of tough paper. Then using a pair of scissors, I cut away the paper where I know the letter U should be. After I have masked around the outline of this letter I proceed to prepare the other letters on down the line. The whole operation requires only 30 minutes.

The letters are now ready to be sprayed. When I remove the masking, I take it all off in one piece, with the exception of the center of the letter A. I set this large paper stencil aside and use it again on the next 'plane. I can do this with very little masking. I continue using this same stencil until the masking tape has no more adhesion.

Another method is to first spray the area (where the name is to be laid out) with the paint specified for the letters. After this area is dry I lay out the letters and then tape them in solid, placing the tape inside the edges of the letters instead of outside. In other words, the letters are masked instead of the background. This must be done just before the final paint job is to be sprayed on the surface. After the final coats have been sprayed, the tape covering the letters is removed. Each built-up letter in tape is left in one piece and saved for next plane.

You may have to do a little patching on these taped stencils if you are not careful in removing them, but this is a small item in comparison to the masking materials and time saved. I have used this method many times and have found it to be successful. Another thing about this is that your letter painting is finished ahead of the final painters and you don't have to worry about marring their work.

On some 'planes I have found it profitable to cut out and prepare a complete set of numbers ahead of time. This can be done in the same way that you would cut out a regular stencil, except that you have to cut out your number in one piece. In the method just described I have found that a squeegee roller is handy for pressing the edges of the tape close to the surface.



Taping Large License Numbers

The license numbers of nearly all 'planes are applied by spraying. This calls for considerable masking, but it can be done quickly and at small cost. I generally have a pattern of each number made up. I mark out the specified numbers and then proceed with the masking as I did on the letters, U. S. NAVY. The license numbers on a wing are at least 30-in. high, and here it doesn't pay to try to save the masking tape to be used over again. If a good brushing enamel is used we need only one strip of narrow masking tape around the outline of the numbers. I prefer cloth masking tape when enamel is being brushed, as the paint is less likely to creep underneath the edges where we might happen to be masking over a row of rivets or some other area that isn't perfectly smooth.

In Fig. 1, you see a small commercial wing with the license numbers and outside section masked and almost ready for the spray room—with the exception of a little repairing on the top edge, and cleaning. This wing was originally finished in aluminum dope and painted with black numbers. It is now going to be repainted with red numbers and trimming, with the covered section still remaining aluminum. Ordinarily, on a new job, the general procedure would be to spray the entire surface in aluminum and then mask it, as illustrated in Fig. 1.

An apprentice boy did all the masking on this wing. He has used wider tape than is necessary but he did the entire masking job in 1½ hours, which is very good considering the fact that he had had only four weeks' experience in using masking tape. When the wing has been finished and all the tape and paper are removed, the painted letters and numbers will have a neat clean-cut appearance, thanks to the masking tape.

Taping Rudder for U. S. Army Colors

In Fig. 4, you see one side of an airplane rudder masked ready for re-spraying the seven horizon-

Fig. 3—Another example of masking background in preparation for spraying letters.

tal red stripes characteristic of U. S. Army 'planes. The six "in between" stripes are white. The adjoining area—the one-third at the left—is blue. On a new job this blue section is sprayed first; then it is marked and masked. The dividing line between the blue and the remainder of the rudder must be perfectly straight. After the blue has been masked, the entire remaining area is sprayed with two coats of white. This area is then divided into 13 equal horizontal stripes — seven red and six white. The stripes to remain white are now masked and the rudder is ready for the final red stripes, as illustrated in Fig. 4.

On 'planes that require small numbers and lettering (such as the model number, manufacturer's name and class identification, in letters about 3-in. high) I have found it convenient to make complete stencils of masking tape the same as you would make any other stencil, except that you must leave out all the ties and fill in the centers of the letters or numbers where necessary. To save time, I always cut two or three sets of stencils at one time. This can be easily done by laying two or more strips of tape, one on top of the other. It may be a little difficult to separate the tape along the edges that have been cut, but with a little practice you will find that it can be done. This way you always have an extra stencil for replacement.

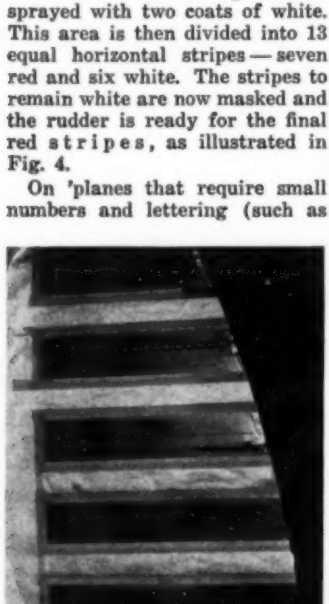


Fig. 4—Aircraft rudder masked and ready for spraying seven horizontal red stripes.

Stencils of Tape for Small Lettering

There is considerable ½-in. stenciling (lettering ½-in. high) on a 'plane. Formerly I had difficulty in getting a clean stencil job, as we had so many places that were not perfectly smooth or free from small projections. Then I tried to cut them out by laying masking tape on regular stencil paper, using the regular stencil cutting machine. This proved to be successful, although at first I had a little difficulty separating the tape from the stencil paper. I overcame this trouble when I began using a stencil paper that had an oil finish.

I can always make a neat job with the tape stencils, regardless of where the markings must be located. Once a tape stencil is placed properly it will stay there without someone holding it, and without fear of the paint creeping underneath the stencil. Where several lines of markings are re-

quired, I cut and join the lines of tape together to suit the location for which they are intended. After a job is complete, each stencil is laid loosely on the original piece of stencil paper and put away to be used over and over again later. This method of stenciling can't be beaten. You still have the cost of the paper, but that is only a trifle in comparison to the time saved and the neat professional appearance of the job.

Taping for Color Bands

Pipe lines for gas, oil, fire extinguisher, etc., are identified by a specified color band ½-in. wide —placed near each connection. Inspection calls for almost a perfect color band. Since I was never a skillful freehand man, I started using masking tape. At first I would place three pieces of ½-in. tape side by side and then remove the middle piece. After I brushed in the specified color and removed the tape from each side, I had a perfect color band. In time I learned to estimate the ½-in. space accurately and now I use only two strips of tape. I have omitted using the middle strip as a spacer. All pipe lines go through the paint shop before being installed, so after a few simple instructions and a little practice, the apprentice boys can be taught to do this work quickly and at low cost. Still better now, colored cellophane is being used in some factories in place of the painted bands.

All of the areas on a wing that are specified for walking are painted by the use of masking tape. The striping of cowling, fuselages, propellers, designs and squadron markings, etc.—all are applied after the proper areas are shielded with masking tape.

Masking tape has almost entirely eliminated sign painters from aircraft paint shops. The U. S. Government and other purchasers of aircraft now practically insist that masking tape be used wherever possible. It has cut down the cost considerably and gives a neat clean-cut job. I take off my hat to the makers of masking tape because I certainly could not nor would not be without it.

Automotive Development Through Chemistry

The part played by chemistry in the development of the modern automobile will be demonstrated at the du Pont Co. exhibit at the New York World's Fair.

Chemical materials contributing to improvement in metals, tires, finishes, glass and accessories will be shown. Displays emphasize the importance of laboratory research in the industry. The exhibit then interprets this scientific work in terms of everyday application.

The chemist's share in the evolution from the costly car of the early twenties to modern standards includes:

Quick-drying lacquers that reduced the time required to paint a car from several weeks to a single day. Releasing millions of dollars worth of machines from expensive delay, they speeded mass production. This permitted the gradual decline in automobile costs.

Represents Maas & Waldstein Co. In Upper N. Y.

W. C. Treadwell, for several years New England representative of Maas & Waldstein Co., makers of industrial finishes, Newark, N. J., is now covering upper New York State for his company, with headquarters at Rochester, N. Y.

Mr. Treadwell, a finishing engineer of wide experience, brings to users of industrial finishes in his new territory an expert knowledge of electroplating and metal finishing in all their phases.

Finishing Oak Chairs

IN SCHOOL FURNITURE BROWN, WALNUT, MAHOGANY

BY R. E. CASEY

THE COLOR known as "school furniture brown," for plain and quartered oak and maple, was established by a general conference of producers, distributors and users of school furniture in June, 1929. The industry has since accepted and approved, for promulgation by the Department of Commerce, this recomendation which establishes the color for stock varieties of wooden school furniture. The industry has fixed light and dark limits of shades within this color.

Printed color plates are included in the booklet entitled "Color for School Furniture," which is "Simplified Practice Recommendation R111-30," published by the Bureau of Standards, U. S. Department of Commerce, Washington, D. C. Sample color blocks showing school furniture brown finish on different kinds of wood are distributed by the National School Supplies & Equipment Association, 419 S. State St., Chicago, Ill.

In producing this finish the first step is to see that the exposed wood surfaces have been smoothly sanded and cleaned of all traces of sander dust and mill dust.

Then we inspect the furniture carefully for open joints and cracks. I have found by experience that these joints and cracks should be carefully filled with a good grade of crack filler made especially for this purpose. The filler I have in mind comes in powder form in the natural color. We mix it with water to make a thick paste, and add enough water stain dye to match the color of finish we are going to produce. We press the crack filler into all the places that have to be puttied. After this dries thoroughly the entire wood surface is again sanded smooth and blown clean. We apply a coat of school brown filler mixed in the proportion of 10-lbs. of filler to the gallon of thinner. This filler is prepared in a large dipping tank and chairs to be finished are dipped into this solution.

Chairs Filled by Dipping

Dip-filled chairs are put on a drain board and allowed to drain. Then a coat of heavy filler is brushed on all of the fronts and seat. After the filler is dry the next step is to rub off all excess filler, being careful to rub across the grain of the wood as much as possible. The work is then ragged off again with a clean cloth. We use a pick or short-bristle brush to remove any excess filler that still remains inside corners and in inaccessible places that were not reached by the rag-wiping operation.

The filled surfaces are permit-

ted to dry overnight. We carefully inspect the work before the coat of lacquer sealer is applied. I have found that filler will "sweat out" in some places—for example where it has accumulated under any iron hardware on the furniture. Special precautions must be taken to clean the filler from these places before sealer is applied.

Sealer; Finish Coat; Rubbing

We apply a coat of good grade lacquer sealer, using about 18% solids at the spray gun. The sealer is allowed about two hours to dry. The next operation is to sand the surfaces smoothly, using No. 6/0 finishing sandpaper. The sanded surfaces are carefully ragged off and blown clean with an air gun to remove all traces of dust. Now for the varnish or lacquer finishing coat.

When the finishing coat is dry the chairs are ready to be taken to the rubbing room. Here we have a very important job to do. If a piece of furniture is not properly rubbed to a smooth surface, it doesn't look good and it doesn't feel "professional" to the touch. As a result, it lacks sales appeal. When buyers enter a store room or sample show room, the first thing they do is to look at the color and finish on the work. If the furniture has been properly filled and finished and rubbed down satisfactorily the buyer is favorably impressed. School brown is a beautiful color and is a popular finish for furniture in schools and churches.

Walnut and Mahogany Colors

To finish plain oak in a walnut or mahogany color, it is of course necessary to have the exposed surfaces sanded perfectly smooth. For walnut finish, apply a walnut paste filler of medium brown color. When this application of filler is dry, tow it off thoroughly, wiping across the grain of the wood. After this job is done, go over the work again with a clean rag as previously described. The filler should dry overnight.

Apply a coat of brown walnut lacquer shading stain, being careful to apply a smooth even coat of stain on the work. This lacquer shading stain will usually dry to coat in about two hours. Then you are ready to apply a coat of light colored walnut sealer or shellac. The shading stain and the colored sealer help to produce the natural walnut color. Their use also partly kills the oak grain which otherwise would show too much light oak and would not look like a walnut color. After the sealer is sanded smooth we are ready to spray the finishing coat. Oak wood, treated and finished in the manner described, has the appearance of walnut.

Plain oak can also be finished in a colonial red mahogany by using mahogany filler and mahogany lacquer shading stain. Oak chairs finished by this method closely resemble chairs made of gum or maple and finished in imitation mahogany.

I have finished thousands of chairs by the methods herein described and have found the finish to be both attractive and durable.

Electric Heaters

Illustrated descriptive bulletins on unit electric heaters, electric vane strip heaters and electric furnaces, have been issued by Harold E. Trent Co., 630 N. 57th St., Philadelphia, Pa.

Fig. 1—Testing viscosity of a finishing material with Zahn cup and stop watch.

by WILLOUGHBY G. SHEANE

Chemical Engineer
General Electric Co.
Bridgeport, Conn.

WHY IT IS IMPORTANT TO

Measure and

IN ORDER to obtain a consistently good organic finish, it is necessary to maintain control limits on the material as well as on the equipment used. Of no less importance than baking schedules, spraying pressures, etc., is viscosity—that characteristic of lacquers and enamels which influences to such a great extent, their sprayability, flow-out and build.

The role of viscosity is sometimes not thoroughly understood, yet it is quite simple if it is thought of as the reverse of fluidity—a highly viscious material being one of low fluidity and vice versa. In terms of the laboratory, viscosity is the internal frictional resistance offered by a fluid to change of shape or to relative motion of its parts. Generally speaking and from the practical standpoint, materials of low viscosity will spray easily and flow well due to their fluid condition. On the other hand, high viscosities lend themselves to building, that is, they will allow the application of comparatively thick films without sagging.

Factors Influencing Viscosity

The best viscosity for a particular method of application will depend on the amount of solvent added, the temperature, and the nature of the finishing material and thinner. Only the first two points are of importance to the finishing superintendent, inas-

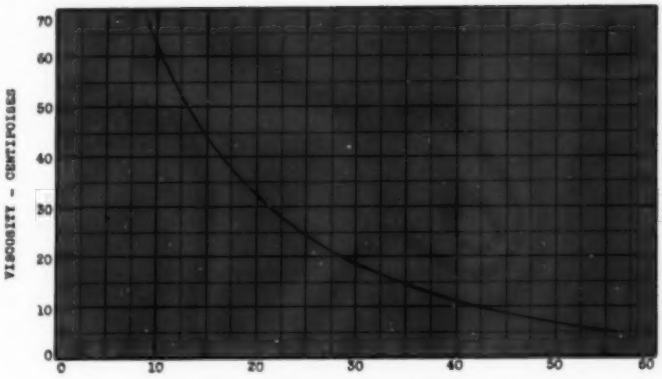


Fig. 2—A typical viscosity-solvent-addition curve for a baking synthetic material.

Control Your Viscosity

much as they are the ones directly under his control. After a suitable material has been selected, the proper solvent is ordinarily purchased from the paint manufacturer in view of his knowledge of the formulation. This is the usual procedure and it is a safe one. The kinds of resins, pigments and solvents used comprise a chemical problem which is one best left in the hands of technical specialists.

All other factors remaining constant, the addition of increasingly large amounts of thinner will progressively reduce the viscosity of a finishing material and, at the same time, produce a decrease in the concentration of non-volatile solids. However, the relationship between viscosity and the amount of solvent added is not a direct one, which may be explained by saying that the addition of two volumes of solvent does not always produce a solution half as viscous as that obtained by the addition of one volume.

As a matter of fact, it will be seen by the chart in Fig. 2 (a typical viscosity-solvent-addition curve for a baking synthetic) that the rate of fall of viscosity decreases considerably with the addition of increasing amounts of solvent. For example, the change in viscosity between 10% and 20% solvent is approximately 31 centipoises, whereas the change between 40% and 50% is only about 5 centipoises.

Within limits dictated by such factors as the evaporation of solvents and the stability of the material under heat, a range of viscosity may be obtained without

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changing the solvent content by raising or lowering the temperature. Higher temperatures, by allowing more mobility within a solution, will produce a decrease in viscosity and, conversely, lower temperatures tend to produce a thick, viscous solution. This procedure, unlike the addition of solvent, does not alter the non-volatile solids content appreciably and, as a direct result, the hiding power remains, nearly constant. The effect of temperature on the viscosity of a baking enamel is shown by the chart in Fig. 3.

Measurement of Viscosity

Control of manufacturing methods by rule of thumb has no place in industry today. Testing the viscosity of finishing materials by pulling a paddle out of a pail and watching the material run off is as completely outmoded as the testing of the pH of plating solutions by tasting with the finger.

The use of the hydrometer is a step in the right direction, but it does not go the whole way for a number of reasons. First, it is not true that the specific gravity of a paint mixture and its viscosity are directly related. The viscosity of a finishing material may vary considerably, due to the use of a different solvent or because of temperature fluctuations, yet no appreciable difference in specific gravity can be detected by a hydrometer. Further, hydrometers are not sensitive to changes in thinning ratios to the degree exhibited by viscosimeters. Consequently, variations in sprayability and hiding power can exist without any great change in specific gravity being indicated by hydrometric methods.

Many instruments for the measurement of viscosity have been proposed and used including the Saybolt, Engler, MacMichael, Ford, Cochius and others. Some of these are extremely accurate and require considerable skill in the use of delicate equipment. Others are characterized by their simplicity and practicality, and are ideally suited to finishing control. Perhaps the best known in organic finishing are those using the falling sphere, the bubble, and the flow principles.

The falling sphere method makes use of the fact that a steel ball requires more time in falling a given distance through a heavy,

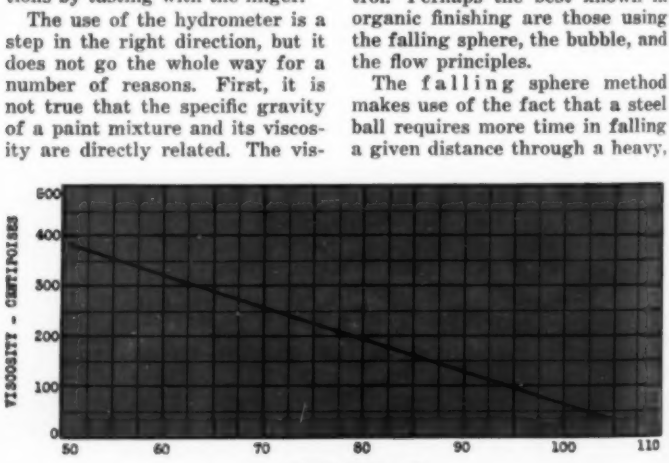

Fig. 3—Chart line shows the effect of temperature on viscosity of baking enamel.

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viscous fluid than through the same distance within a light, less viscous fluid.

The bubble method is based on the time necessary for an air bubble of definite length to rise in a slender sealed tube of standard dimensions, filled with the fluid to be tested.

The flow method measures the viscosity as the time necessary for a definite volume of fluid to pass through a standard orifice.

Of the three, the flow method has found wide use in the form of the well known Ford cup, Zahn cup and others. The Zahn cup, which comes in four orifice sizes, is attached to a loop handle and may be used directly at the scene of operations. It is filled by immersion to its top, the viscosity being measured by the time required for emptying through the bottom orifice after a quick withdrawal from the material. The cup method possesses the advantages of being inexpensive and easily used on all types of paints, both clear and pigmented. Zahn cups may be kept immersed in the fluid and withdrawn when a reading is required, see illustration marked Fig. 1.

Practical Considerations

As has been indicated, viscosity can be adjusted by the addition of varying amounts of solvent or by temperature regulation. The ideal situation calls for both the maintenance of a constant temperature and an invariable thinning ratio after the proper viscosity has been determined. Although the control of viscosity by temperature alone has the distinct advantage of not changing the thinning ratio and the solids content of a finishing material, unfortunately the installation of constant temperature apparatus is not always feasible, either for reasons of cost or because the use of such equipment might interfere with manufacturing procedure. Therefore, it is usually necessary that constant viscosity under variable conditions of temperature be attained through the use of solvents.

In cold weather, larger solvent additions are necessary than in warm weather. In some cases, depending on the nature of the material and the job, a single compromise thinning ratio and viscosity might be used under all conditions of temperature, warm or cold. Although complete control by means of solvents would necessitate a different ratio for each temperature found in a finishing room, one for average warm and one for average cold temperatures are usually sufficient.

For example, a finishing room may average 85°F. through the summer months and 72°F. during the winter period. For a certain material these conditions might require four volumes of paint to one of thinner and three volumes to one, respectively to give the same viscosity. Under this system, the non-volatile solids content and the hiding power would be somewhat higher in summer than in cold weather, but average good sprayability, flow-out and build would be obtained.

The maintenance of constant viscosity means the elimination of one variable in organic finishing. Much time and money can be saved if viscosimeters are used to set up material application specifications and for periodic control checks on the material viscosity.

HOW WE DISCOVERED AND REDUCED OUR

Waste in Spray Finishing

BY T. J. PIRRUNG

OPERATING FIVE SPRAY booths at capacity, our chair factory formerly used 85 gallons of lacquer a day. A careful check and analysis of this lacquer consumption showed that: 1) The clear lacquer used on identical chairs varied from 7c to 12c worth of material per coat; 2) this variation was due to the difference in the skill and attention on the part of various spray operators; and, 3) a saving of $40.00 worth of lacquer a day could be made if all spray operators were equally efficient.

The first efforts we made to reduce this coat brought out additional facts. Two coats of lacquer of 21% solid content, over a sealer coat, produced a finish equal to three coats of lacquer of 16% solid content, at an appreciable reduction in cost. We also learned that an air pressure of 65 to 70-lbs. gave best results, and that little or no reducer should be used. Owing to variations in atmospheric conditions and some makes of lacquer, we occasionally had to add a small amount of reducer in order to obtain an immediate wet coat free of mist spots.

One of our finishing processes included the application of a coat of lacquer enamel on oak; then filler, followed by clear lacquer. The lacquer enamel had to completely color the wood, yet it had to be applied lightly in order that the pores would not be closed with a resultant poor and inadequate take of filler. We found that the pigment content in various makes of lacquer enamel, of the same color, varied to such an extent that from 8 to 21c worth of material was required to color the wood; and that, when filled, there was no similarity in the appearance of the finish, because where the greater amount of material was used the pores were sealed and the filler would wipe out. This was exceptionally bad where there was little contrast in the color of lacquer enamel and filler.

Corrective Changes We Made

To correct these conditions we found it necessary to control the air pressure at the compressor, instead of permitting each spray operator to regulate the spray pressure to suit himself. We decided to use only lacquers of at least 21% solid content . . . . and pigmented lacquers which, by actual test, produced the required depth of color over the largest area of surface.

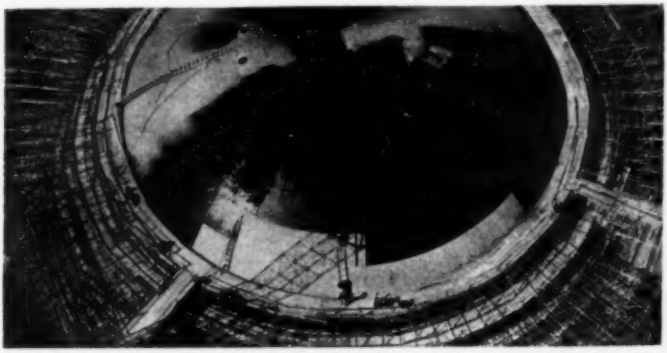
We used gravity-feed buckets

wherein each 1-in. depth of material equalled .4 of a gallon. A chart was prepared and posted at each spray booth to show how many chairs of each style and size could be and should be coated by each 1-in. of material used. Each operator was supplied with a yard stick and given orders to measure the number of inches of material in his bucket when he began and again when he finished work on each job that represented a certain number of chairs of one particular style or pattern. Space was provided on his daily time card for these entries. The foreman, an expert spray man himself, checked the reports and demonstrated to the workmen the correctness of the requirements specified on the chart.

An improvement in results was almost immediate. Even the most proficient spray operator improved his performance. It was a source of great satisfaction to the management when one lot of 7,000 chairs showed a variation of less than 10% in finishing material used per chair, as compared to the previous difference of over 40%.

In our cost department the number of inches of material used and reported on the daily time cards was changed into terms of gallons and checked monthly against the number of gallons actually consumed—as indicated by the amounts taken from drums of material. The clerical work involved was negligible in proportion to the savings effected.

Wastage and spoilage in lumber, hardware and upholstering material can be quickly detected, but the wastage of material that vanishes into the air, as lacquers do, can only be accounted for and controlled by an accurate knowledge of requirements and accurate records of results. I believe this experience will be helpful to others.



At the New York World's Fair the great Perisphere, which measures more than 200-ft. in diameter, was spray painted with modern spray equipment. When this picture was taken, only part of the Perisphere had been painted. Compressed-air lines were run all the way from the ground for this unique job, and material tanks were mounted on the top platform. Information and photograph furnished by The DeVilbiss Co.

Pearl Essence Finishes

"Who uses pearl essence finishes now? What do they use them for, and why?" * * In this article an authority on the subject reveals some interesting facts about this beautiful but durable finish, the kinds of products it is used on and the severe exposure tests to which it is subjected in service.

BY H. E. MATTIN
Chemical Director, The Mearl Corp.

IN 1931, AFTER a limited use for some 300 years, pearl essence suddenly "starred" as an automotive finish. Immediately it achieved a tremendous following but, as is often the case when some product suddenly acquires popularity, a critical opposition appeared and declared that it was "too beautiful to be durable."

Pearl essence is a pigment, not a vehicle. A pearl essence finish is only as durable as the containing vehicle. Then the question arises: "Does pearl essence cause the vehicle to deteriorate?" There are different kinds of pearl essence, just as there are different kinds of every other product, and today the manufacture of pearl essence has so improved that I feel safe in saying it increases durability rather than the reverse.

The only way pearl essence could harm the finish is through decomposition and having the decomposed products act on the finish vehicle. Decomposition would be evidenced by a yellowing of the pearl lacquer film. To hasten this test, yellowing could be accelerated by exposing the pearl essence to either heat or sunlight or both. Practical examples follow:

Withstands Severe Service

Heat stability—In the past it was taken for granted that pearl essence celluloid sheets should be yellowish. Today, in the chain stores, you can see the change and improvement in perfectly white pearloid pens and pencils. Cellulose acetate, molded at 400°F. with pearl essence, comes out as a snow white plastic product. That is something to justify the use of cellulose acetate when color and appearance are factors. In these two cases pearl essence has been subjected to heats of 300° and 400°F., and in all cases it has stood up.

Light stability—Men's panama hats made of Japanese straw have been finished with pearl essence for the past two years. Though sprayed in white, natural and

pastel tints, not one single case of yellowing or discoloration has come to my attention—this despite the severe exposure to which a straw hat is subjected by the actinic rays of the summer sun. In the coated cloth industry, castor oil is generally used as a plasticizer. This material, in conjunction with alkyl amines (decomposition products) will yellow lacquer any time. All last summer the pearl white pocketbooks were exposed in show windows. Did the exposed side yellow? The answer is that more will be sold this year than ever before.

One of the severest service tests for lacquer is on pearl necklaces. As the wearer's bosom rises and falls in breathing, motion is given the pearls causing them to turn continuously and, in the case of warm weather, the pearls are often in contact with perspiration. Try this with ordinary lacquer. Notwithstanding this severe test, reputable American manufacturers guarantee their products for 20 years.

Further, to answer the entire question from a practical standpoint, on the wharf next to ours at Eastport, Maine, the owner of a sardine plant parked his pearl brown automobile every week day, rain or shine, for five years. It stood exposed to the worst wind-driven salt-air conditions possible, on the south side of the building where it received alternate beatings from the sun and rain. We examined that car repeatedly every summer and until the owner died and the car disappeared in a sale, its beautiful pearl iridescent finish, in all of its original glory, could be instantly restored by wiping the surface with a piece of cloth.

Cost of Pearl Essence Finish

As regards cost . . . . the fountain pen mentioned in this article retails for only 20c; the straw hat of good quality can be bought for $1.50; the hand bag, complete with mirror, zipper and inner compartment, is priced at 98c; the pearl necklace, American made, sells for only 25c. What price pearl essence!

Today pearl essence sells for one-half the 1931 price, yet it is four or five times more brilliant. The spraying and dipping equipment manufacturers have also progressed, which has helped to make possible better and cheaper pearl finishes. One type of spray head that I tried out recently gave so much better pearl effects that it was possible to use 25% less pearl essence in the formula for finishing material.

Decorative values

And finally, why do people use pearl essence? Citing one example: The cloth people put on one coat of pearl essence finish and there wasn't enough difference to warrant charging an extra price; but four coats made such a beautiful effect that the goods sold for double the old price. Greater consumer appeal was there, so pearl essence is a staple finish in that line now.

Two years ago, a nationally known manufacturer turned out a plastic box. It didn't take. Last year someone sold them the idea of saving new die costs by pearlizing it; 125,000 boxes went out for the Christmas season. What was the price of pearl finish on a 20c box? Ans.: Two competitors are imitating the finish this year.

This story multiplies itself in the pencil trade, the giftware

trade, etc., where the more pearly the effect, the greater the sales appeal. With the pearl finish, it is not what it appears to cost; it is what it covers—and most of all, it is what the consumer wants.

David Andrew Becomes President of Ferbert-Schorndorfer Co.

At the Annual Meeting of the Ferbert-Schorndorfer Co., Cleveland, Ohio, held March 22, 1939, President S. C. Schorndorfer announced his desire to retire as active head of the organization in order that, as he said, he would have more opportunity of doing the various things which he had long wanted to do but which he had not as yet had an opportunity of doing.

The Board accordingly elected as President, David Andrew, and as Vice-President, W. E. Gillette, Mr. Schorndorfer to continue his association with the company as Chairman of the Board of Directors.

Mr. Schorndorfer is retiring after 38 years of continuous service in the paint and varnish business. He originally started to work with the Glidden Co. in 1901 and continued with them until the formation of his present company with his late co-worker, Albert J. Ferbert. The present company started operations in September, 1921, and for the period of its existence Mr. Schorndorfer has been the directing head of the factory organization.

In the selection of David Andrew as President, the Ferbert-Schorndorfer Co. secures the guidance and ability of a man who has spent his entire life in the paint industry. His first job, after arriving in this country from Scotland, was in 1896 with the Detroit White Lead Works. In 1910 he went to work for Berry Brothers, Inc., as General Sales Manager. In 1915, he made a change to Cleveland from Detroit, taking up the position of Director of Sales of the Arco Co. Then, in 1932, he came with the Ferbert-Schorndorfer Co. in the same capacity. In August 1936, on the death of the late Albert J. Ferbert, he assumed the office of Vice-President of the company.

W. E. Gillette, who succeeds him as Vice-President, started his work in the paint industry with the Ohio Varnish Co., in January 1919, after his discharge from the Army. Through his contact with Albert J. Ferbert, who was at that time General Manager of the Ohio Varnish Co., he became associated with the present company and has been with it during the course of its growth, being Treasurer up to the present date and still retaining that title.

Bulletin on Air-Motored Agitators

A new booklet recently prepared and distributed by the Pneumix Division of Eclipse Air Brush Co., 390 Park Ave., Newark, N. J., contains interesting and informative reports on the performance of Pneumix air-motored agitators in laboratories and industrial plants, along with an illustrated descriptive bulletin. Copies can be obtained from the company.

A contemporary bedroom grouping made of avadoire, with diamond-matched panels. Interesting brass hardware emphasizes the simple, well styled lines of the case pieces. Notice auxiliary shelves on the dressing table. Photo, courtesy of the American Furniture Mart.

One of the six Rock Island Rockets now in service. The power car is painted in two tones of red — maroon and fire-engine — and is striped with stainless steel.

Railway Car Painting

IN THE MAINTENANCE of modern railroad passenger equipment, painting and repainting are highly important. Car shop painting departments are full of romance and interest. In cooperation with progressive paint manufacturers, they have been instrumental in the development of modern finishing systems.

The problem of selecting and using suitable primers and surfacers for steel cars is a matter for careful investigation. These materials must have excellent adhesion, elasticity and flexibility to withstand the vibration and weaving of the cars while they are in motion. And, last but not least, the materials used for the priming, intermediate and finish coats must unite with each other so that when the several coats are combined into one homogeneous film they will present a finish of great durability and beauty.

BY W. R. ALLEN

The first step in finishing a steel car, assuming that the car is either new or that all of the old finish has been removed down to the bare metal, is to sandblast (blast clean) the car in a dry atmosphere. Then blow off all dust with compressed air, especially around beads, moldings and rivet heads. After this cleaning operation the prime coat should be applied immediately in order to prevent the possible accumulation of moisture or any atmospheric film on the bare steel.

Zinc chromate primer is one of the modern primers favored by many railroad painters. For spray application it should be reduced at about 50/50 (equal parts) with synthetic reducer and applied in a very light coat—so light that the steel is discernible through the primer. When applying this primer great care should be taken to spray it thoroughly

around all rivet heads and lap joints. This primer should be allowed to dry at least eight hours.

Our second step is to apply two coats of synthetic surfacer (the railroad's standard) spraying the first coat on lightly and following with a second full wet coat—starting the second coat from the point where the first coat was started. Then comes an application of synthetic surfacing composition, where necessary, by knifing. When it is dry the entire surface is sanded (using a wet-or-dry abrasive paper) in order to remove all nibs, spray dust or irregularities of any kind. Then a third coat of surfacer is sprayed on, allowed to dry, and is sanded smooth.

If any spots are cut through during the sanding operation they must be touched up with the same materials and then sanded smooth.

With the priming and surfacing coats applied, dried and sanded smooth, we are ready to spray two coats of finishing enamel. It is customary to spray the first coat lightly with vertical strokes and follow immediately with a second full wet coat. The second coat is started at the point where the first coat began.

Striping and lettering should be applied in accordance with the railroad's standard specifications. This is done with specially formulated paste colors or synthetic enamel colors which generally dry "out of dust" in 30 to 40 minutes. A specially formulated clear synthetic is applied over the lettering and striping as an added protection.

The exteriors of deck sides are finished the same as the car body—according to the schedule just described. All of the under structure is thoroughly cleaned and primed with zinc chromate primer, after which one or two coats of synthetic enamel, or a good grade black protective coating, is sprayed on. Such attachments as brake rods, couplers and chains under the car should be primed with zinc chromate primer and coated with one or two applications of a suitable black protective coating.

Grab irons and handholds are smoothed up, given one coat of zinc chromate primer and finished with either snythetic enamel or a black protective coating. For many years the Pullman Co. has painted grab irons and handholds orange for visibility. However, the color these parts should be painted is entirely a matter of railroad standard or practice.

Coach Interiors

The face sides of inside sheets on the interiors of coaches and passenger equipment are primed and surfaced similar to the exterior sides of the sheets. Various color schemes, practically without limit, can be worked out for interior finishes in synthetic enamels, lacquers, or synthetic lacquers. The new transcontinental streamlined trains are true works of art in regard to color harmony and attractive interior design.

Seat caps, sash, window sills and other paneling to be finished should receive the usual prime coat, followed, where necessary, by surfacing. These areas are then finished in a manner to harmonize with the general interior color scheme of the car.

The headlining or ceiling is finished along the same general lines

as the rest of the interior—unless it is made of composition board or wood, in which case it should be primed, surfaced and glazed if necessary with undercoats especially adapted for wood or composition board. After this treatment it can be finished with synthetic enamels, or lacquers, in shades and tones to harmonize with the remainder of the interior.

Interiors of Baggage and Express Cars

Surfaces to be painted should be cleaned so they are free of oil, grease and other foreign substances. The cleaning may be done with wire brushes, scrapers and cleaning solvent or wash-up cleaner. Then apply a coat of zinc chromate primer in exactly the same manner as it was applied to the exterior surfaces. Allow it to dry eight hours.

When the primer is thoroughly dry apply one coat of surfacer. Glaze all indentations with synthetic surfacing composition, and sand to a smooth surface. Spray two coats of synthetic enamel, applying the first coat light and following with a full wet coat, starting the second coat at the point where the first coat began.

The color of the finish coats of synthetic enamels must match the railroad's standard color for this class of equipment. Doors on the inside are finished the same as the walls. Any stenciling or lettering necessary on the inside is handled in a way similar to the process described for the exterior.

If the floors are wood, the tongues and grooves of flooring should be coated with a suitable wood floor primer, or linseed oil. Be sure to coat the top surface of the under floor heavily with wood floor primer or linseed oil. The finished or top side of the floor should then receive at least two coats of a flexible floor coating of a color to match the railroad's standard.

Steel floors are primed with zinc chromate primer or other suitable primer for steel, and then coated with two coats of floor coating for steel.

Mail cars are finished in the same manner as baggage equipment.

Guards over steam pipes are finished identically the same as the interiors. Conduit pipes, rods, irons and safety bars are cleaned thoroughly by scraping and washing their surfaces with wash-up cleaner. Then they are smoothed and primed, after which they also receive either one or two coats of a black coating or synthetic enamel or high-heat paint, as the case requires. Conduit pipes in the ceiling are finished in the same color as the ceiling.

Interior Finish of Dining Cars

Color schemes for dining cars usually harmonize with those on the interiors of passenger, baggage, mail and Pullman equipment. However, it is possible to make them different, as is frequently done in the dining rooms of hotels and homes. The basic principles of finishing are practically the same as just outlined for the interiors of other cars.

Dining car kitchens are generally finished in white or cream-colored synthetic enamels or lacquers, although some railroads still use oil enamels. Pantries should be finished in colors to harmonize with the main part of the car.

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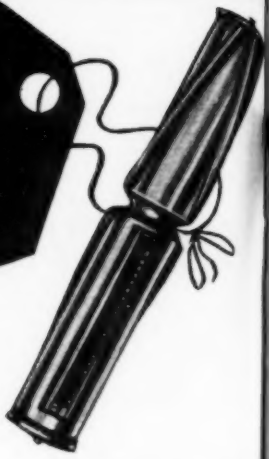

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The insides of vestibules on all classes of steel cars are finished the same as the interiors of the cars.

Roofs of Cars

Steel roofs are cleaned, then primed with zinc chromate primer or other suitable metal primer, according to the railroad's standard. After allowing the primer to dry for the required length of time the roofs are coated with two or three coats of roof composition or roof paint. Synthetic enamel can be used on roofs, and it makes an ideal coating. However it is generally more expensive than the usual roof coatings recommended for steel railroad car roofs.

Canvas roofs receive different treatment. Before the canvas is stretched on the deck surface, its under side should be brushed or sprayed with the roof paint or composition material. Deck surfaces should also be coated with the same material. The canvas is then stretched over the decks and coated with specially formulated canvas roof and deck paint, allowing 36 to 48 hours drying time after each coat. These materials are usually made of a lead-and-oil base and specially treated oils which maintain their flexibility for a long time.

Solvents; Alcohols

A 5x8-in. booklet entitled "Solvents, Alcohols, Extenders," published by The C. P. Chemical Solvents, Inc., 11 Park Place, New York, N. Y., contains 48 pages of information about the company's extensive line of solvents, alcohols and extenders for finishing materials.

Du Pont Men Take in The Golden Gate Exposition

West Coast representatives of du Pont finishes, in San Francisco for a three-day sales convention, visit the Golden Gate Exposition. The group is pictured in the du Pont Company exhibit building. Walter J. Sohlinger, West Coast manager for finishes, Brooks Darlington, exhibit manager, and William A. Hart, director of advertising, accompanied the men on their tour.

Optimism featured the sales meetings, held under Mr. Sohlinger's direction, at the Palace Hotel. Reports from the field indicated a definite upswing in the finishes trade during the year, it was said.

EGYPTIAN HIGH-BAKE N. F. R.

To manufacturers making hundreds of various items which require a finish, we suggest that they look into EGYPTIAN HIGH BAKE N.F.R., the new type of Synthetic . . . A multi-coat finish which bakes in one operation . . . A finish highly resistant to chemicals . . . A finish, which when used as a complete system, contains rust inhibitive properties and many other features of interest to manufacturers now using one or another of the many types of finishing materials.

EGYPTIAN HIGH BAKE N.F.R. comes in a large variety of colors as well as Black, White, and Clear . . . Colors are furnished in high gloss . . . Clear may be had in high or medium gloss . . . Excellent flexibility and adhesion.

Write for further information and recommendations regarding the use of EGYPTIAN HIGH BAKE N.F.R. for your own particular requirements.

EGYPTIAN FINISHES

THE EGYPTIAN LACQUER MFG. COMPANY

ROCKEFELLER CENTER, NEW YORK

THE PRODUCTION FINISHING OF *Wire Screen Cloth*

BY J. W. McHUGH
Schenectady Varnish Co.

How screen wire is coated at the factory for durability and decorative purposes, what colors and baking temperatures are generally used, and what the requirements are for a satisfactory finish—during and after its application.

★

FROM A PAINT and varnish standpoint, the coating of what we generally term screen wire (flexible screen cloth for doors, windows and ventilation openings) is of particular interest because nearly all of the fine mesh wire used today is finished and stiffened with some kind of weatherproof enamel or varnish. Because of the peculiar requirements of the trade, many problems have arisen in the finishing departments of these manufacturers.

The basis of most of the wire used for this cloth is steel made by the open hearth or Bessemer process. This steel, which eventually reaches a wire rod size of 5/16-in. after several standard mill operations, is then drawn down through a succession of tungsten or diamond dies to a size of No. 33 or 34 gauge, with diameters .0115-in. and .0104-in. respectively. These sizes are most generally used in the trade.

Copper and bronze wires, also used for screen cloth, are drawn down to the required sizes in much the same manner. Both types of wire are annealed many times to obtain the right degree of hardness and flexibility for the subsequent weaving process. An ordinary roll of cloth requires from 15 to 20 miles of steel wire.

The wire is woven into cloth by machines which have not been changed much in the last several years. The weaving process is relatively simple, although care must be taken to weave the cloth "squarely" so that later it can be cut easily and handled conveniently to make the screens. Up to this point the surface of the wire is bright, although it is covered with a considerable amount of grease and drawing compound. The annealing process blues the steel wire and removes the grease, thus providing a suitable surface for the enamel.

Zinc-coated Steel Wire; Antiqued Copper Wire

To galvanize the steel wire, it must first be zinc coated. It is chemically cleaned and then electroplated with pure zinc, making it far more rust resistant than the ordinary steel wire, which

ADD $ Sales Appeal WITH DAY ENAMELS

The wide variety of Day Enamels enables you to select the one best suited for your requirements. Day Enamels are made in Lacquer, Varnish, Synthetic and Spirit bases. They are prepared for spraying, dipping, rolling, brushing, tumbling and screening.

In Day Enamels you can be sure of greatest sales appeal through clearness and brightness of color, and standardization of shades in different shipments. The smooth working qualities of Day Enamels make application easy.

Mention your requirements and we will submit recommendations for an appropriate enamel finish.

The Day Standard color card shows thirty-six attractive colors. Other shades are made to order. Ask for a copy.

JAMES B. DAY & CO.
• CHICAGO •

"AND HAVE I BEEN HO

A HALF-HO

This new Du Pont LO
temperature baking schedu

DU PONT
REG. U. S. PAT. OFF.

LOW-BA

N HOPING FOR THIS...

LF-HOUR AT 225°!"

Du Pont LOW-BAKE DULUX is FAST...cuts low-ing schedules by 50%...offers a way to double production

IT'S NEW! It's made for manufacturers whose ovens can only attain temperatures of 175° to 250°F.

It's Du Pont LOW-BAKE DULUX ...a new type of DULUX with many of the qualities of HIGH-BAKE DULUX. It offers amazing savings in baking time.

Here are schedules now made practical with this finish:

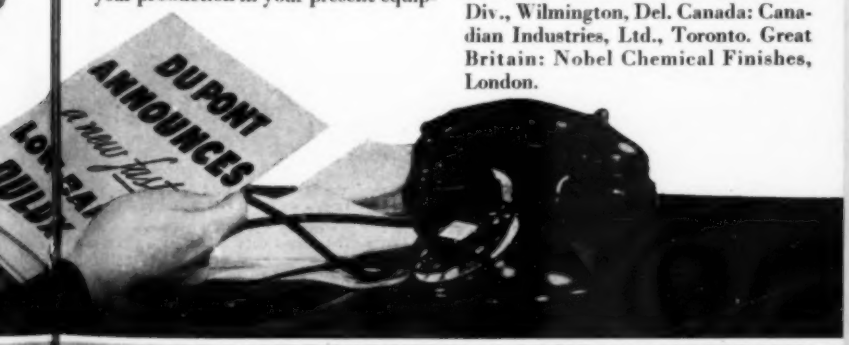
¼ hr. at 250°F. ½ hr. at 225°F.
1 hr. at 200°F. 2 hrs. at 175°F.

Du Pont LOW-BAKE DULUX now makes it possible for you to double your production in your present equipment. Or if new baking equipment is installed, it means only half the equipment investment formerly required.

This finish has excellent gloss and build; hardness, adhesion *and* flexibility; flexibility retention. It is wrinkle-proof under all normal application conditions. One coat gives highly satisfactory hiding.

Du Pont LOW-BAKE DULUX is brilliantly white. It is also available in colors.

For full information about this sensational new finish, write to E. I. du Pont de Nemours & Co., Inc., Finishes Div., Wilmington, Del. Canada: Canadian Industries, Ltd., Toronto. Great Britain: Nobel Chemical Finishes, London.



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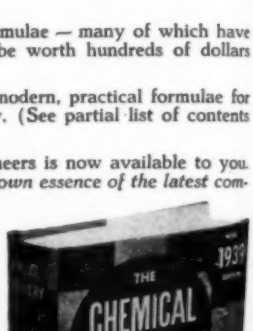
A condensed collection of new, valuable, timely, modern, practical formulae for making thousands of products in all fields of industry. (See partial list of contents below.)

The experience of hundreds of chemists and engineers is now available to you. Use it and profit. *Have at your finger tips the boiled-down essence of the latest commercial methods of hundreds of chemists, engineers, technicians and professors. Have it when and where you need it.*



PARTIAL LIST OF CONTENTS

Rubber & Latex
Adhesives
Polishes
Lubricants
Drugs
Farm & Garden Specialties
Resins
Synthetic Resins
Plating
Pyrotechnics
Solders
Welding
Insecticides
Pharmaceuticals
Oils & Fats
Liquors
Fluxes
Explosives
Paints
Lacquers
Varnishes
Leather
Skins
Furs
Removing Stains
Bleaches
Ceramics
Deodorants
Disinfectants
Laundry Specialties
Dental Products
Etching
Fireproofing
Animal Remedies
Boiler Compounds
Glass
Textiles
Fibres
Beverages
Flavors
Rustproofing
Metal Treatments
Food Products
Enamels
Cosmetics
Inks
Marking Compositions
Soaps
Cleaners
Waterproofing
Metals
Alloys
Pastes
Glues
Fireworks
Waxes
Mildew Proofing
Chemical Specialties
Automobile Specialties
Cements & Concrete
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If you already have Vols. I, II and III, you won't need urging to get Vol. IV. It contains entirely new and different material. It will be just as valuable to you as the previous volumes.

If you do not have the previous volumes, get all four if you can afford it. Or start with Vol. I, and after you have that, we know you will want the others. Remember, each volume is different and complete in itself!

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starts to oxidize immediately upon exposure to moist air. Zinc plated wire must be thoroughly washed in successive baths of rinsing water, or the presence of soluble salts on the surface of the zinc will prevent the finishing enamel from adhering properly, and so later cause unsightly or even unsatisfactory wire.

"Antiquing" or darkening the very bright copper or bronze wire gives it the appearance of weathered wire. This "antiquing" is usually done with a treatment of special chemicals or acids, and it may be done before or after the weaving process.

Black Enamel, Thinned

When it is ready for the final application of enamel or varnish protective coat, the steel cloth is coated with a high quality black enamel that has especially good wearing properties under continued exposure to all kinds of weather. This enamel should distribute itself uniformly over the cloth. If the surface tension is not properly adjusted, the film may not be continuous; some parts of the wire may not be covered at all. The enamel must be of such a nature that it can be applied in a very heavy film to give extra strength and protection to the cloth.

For use at the tower, the enamel is thinned from 50 to 100% with high-solvent power, high-flash point, mineral spirits. Several good solvents are on the market for this purpose. A strong solvent is desirable because the thinned enamel is subjected to considerable agitation in the varnish tanks so that there is a tendency for the varnish base to separate from the pigment.

Gray Enamel Finish

The gray enamel, used on galvanized cloth, should have much the same properties as the black enamel, the gray being applied as an additional protection on top of the zinc coating. In most cases the gray enamel used at the tower is reduced one part enamel to two or three parts of mineral spirits. This reduction is much more severe than that of the black enamel and, for this reason, good gray enamels are harder to formulate. If they are thinned too much, the zinc coating will not be adequately protected, and later it will oxidize in places, thereby resulting in an unsightly spotted white appearance.

Formerly, all galvanized cloth had a finishing coat of clear varnish, but in the last few years makers have considered the gray enamel more satisfactory. If great care is not taken with the preparation and electroplating of the steel wire, the zinc may be deposited unevenly, giving a streaked appearance which later is intensified by the clear varnish. Then, too, most clear varnishes tend to darken or turn yellow with age. This streaking and yellowing has proved to be so objectionable from a sales standpoint that many of the screen makers have adopted the gray enamel.

Resistance to Rust

Along the seashore and in many places in the South, extreme conditions of moisture and humidity are encountered, salt spray and fog being particularly severe in producing a rusting action. Even with the added protection of the zinc coating and enamel or varnish, the life of wire cloth is none

too long. Recently there has come into the market a new type of gray enamel especially designed with an exceptionally high resistance to moisture and salt spray. Comparative laboratory salt spray tests and actual exposure tests have shown it to be a decided improvement over the regular types of gray enamel.

With copper and bronze cloth, rusting is not a factor, but unless the wire is protected with a coat of varnish, the copper will stain quite easily if handled in humid weather. Also, because the copper cloth is quite soft and flexible, a coating of varnish helps to stiffen it so that it can be readily applied to the frames of window and door screens. The clear varnishes for copper are used at about the same reduction as that of the gray enamel, although in some cases mixtures of one part of varnish to five parts of mineral spirits are employed.

In addition to the foregoing three types of finishes, some green and blue enameled cloth is made for foreign use. Aluminum painted steel cloth has made it appearance for bug screens in front of automobile radiators.

Continuous Dipping; Excess Blown Off

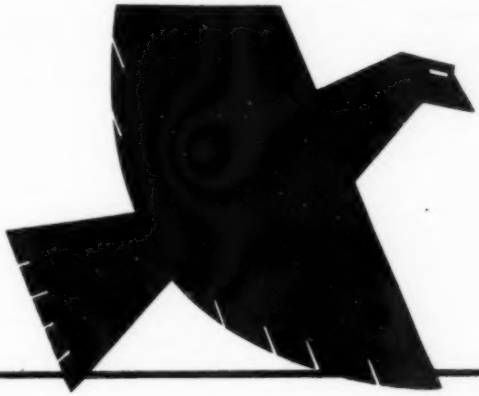
In all cases the enamel or varnish is applied to the cloth in the same manner. Woven wire from rolls of 900-ft. in length is slowly unwound from the roll and passed under a wide-face pulley that is completely submerged in a tank of finishing material. The submerged pulley is solid; it is 8 to 10-in. in diameter and is usually made of pressed fiber or cast iron. Due to the fact that the pulley operates continuously submerged, it seldom has to be cleaned.

As the freshly coated wire leaves the dipping tank, a strong blast of compressed air blows the excess finishing material from the wire mesh, leaving only a thin film of enamel or varnish on the wire. The air jet is placed in such a position that it blows the excess material directly against the inside of the dipping tank, the sides of which extend 2-ft. or more above the surface of the varnish. In this way the excess enamel or varnish blown from the coated wire drains back into the tank and is used again.

Tower Ovens for Baking

The ovens or towers are simply tall heating chambers with one or two top pulleys to support and guide the freshly coated screen wire. Pulleys used at the top of the oven are ordinarily made of wood with a heavy canvas facing. However in some installations water cooled pulleys are used at this point—in which case the pulleys are made of metal. The wire cloth then leaves the tower to be rolled up for future cutting and packing. The speed of the wire cloth through the tower depends largely on the drying properties of the varnish and the effective temperature in the tower. The heat is steam, with the warmed air and the vapors from the thinners of the varnish rising up into the tower.

Recirculated air is sometimes used to give a more efficient drying cycle as the air is blown across the wire cloth, thus removing the fumes from the varnish at a more rapid rate. This type of oven is also quite economical in its heat consumption.



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- **A FINISH** *for every surface*
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- **A PRICE** *for every budget*

Save time and material on Black Japan and enamel finishing—get Berry Brothers recommendation for handling *your* specific product or process. Your inquiry will receive prompt attention. No obligation, of course.

BERRY BROTHERS
Industrial Varnishes • Enamels • Lacquers
DETROIT, MICHIGAN WALKERVILLE, ONTARIO

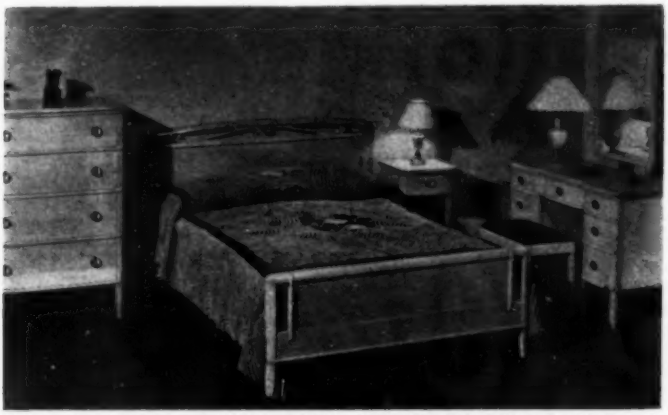
Baking Temperatures

For gray and black enamels, the baking time varies from 11 minutes at 250°F. to 24 minutes at 170°F. The faster baking clear varnishes require from 6 to 20 minutes at the same temperatures. The towers are usually about 75-ft. high, although some of the newer types are much shorter. The wire cloth travels through the tower at the rate of 10 to 20-ft. per minute.

It is quite important that the varnish or enamel be sufficiently dry by the time it passes over the top roll that it will not "pick off" or adhere to the first pulley inside the oven. If the varnish does pick off, it will gradually build up on this roll, causing the wire cloth to appear mottled which makes it unsatisfactory for sale, as the metal is not completely protected.

In determining a satisfactory drying time to meet individual oven requirements the flexibility of the varnish should not be sacrificed, as any deficiency in this respect will be sure to show up later. Screen cloth is often stored for many months before using and if the varnish has become brittle it will chip and flake off the wire while it is being cut or handled. Brittle or "short" varnish films have very poor weather resistance.

It is interesting to note that the type of cloth most suitable to individual localities varies considerably. In the Middle West, screen wire of 12 and 14-mesh is largely used, as house flies are in predominance. In the East, 14 and 16-mesh wire are recommended due to the presence of the mosquito tribe. However, in the South, with its greater variety of insect life, 16-mesh and even finer wire cloth is used.



This Swedish Modern ensemble has a light, almost bleached finish, with highly polished brass pulls. The legs are neatly tailored and all corners are gracefully rounded. Made by Angelus Furn. Mfg. Corp., and displayed at the Los Angeles Furniture Mart.

GILCO
2-IN-1
ODORLESS WOOD BLEACH

ONE CUSTOMER SAYS . . . .

"You will be pleased to know that we have tried a great number of Bleaches and have found your

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to be superior to any of the various products we have tried."

(Signed by a Prominent Manufacturer)

A trial will convince you, too. Write us for detailed information.

THE GILBERT SPRUANCE CO.

Specialists in the manufacture of Wood and Metal Finishes

PHILADELPHIA, PA.

SPRUANCE QUALITY

Hilo Rip-pl Finishes

The Five Hilo Rip-pls, products of the Hilo Varnish Corp., Brooklyn, N. Y., are specially suited for use on cabinets, auto accessories, household appliances, cash registers, novelties, typewriters, etc.

The Rip-pl finish is easily applied with a spray gun. It bakes hard and tough. Patterns vary from fine uniform to coarse heavy structure, without glossy spots or "fish eyes." Coverage per gallon is high and only one coat is needed. All colors are available — familiar dark shades; clear, strong colors such as brilliant reds, blues, greens; also soft pastels.

Roller Coater

The Black Bros. Co., Inc., Mendota, Ill., have developed a series of roller coating machines suitable for spreading a uniform coating of finishing material on panels and sheet stock. The machines are heavy, precision built and have ball-bearings. They have rubber rolls and are equipped with sensitive and accurate micrometer adjustments which permit the coating to be controlled by the gram of weight or by the thousandths of an inch of thickness.

New...

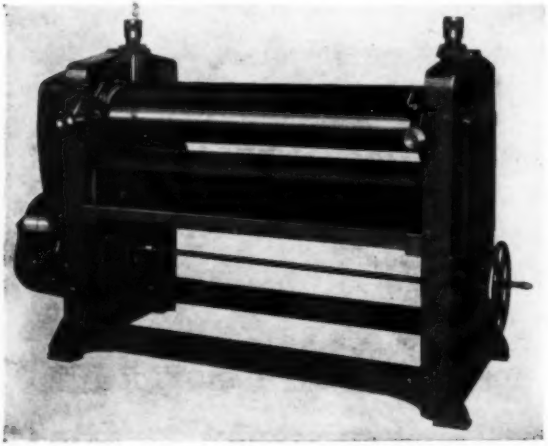
MATERIALS
SUPPLIES
EQUIPMENT

The scraper rolls are made of ground and polished steel slightly smaller than the spreading rolls.

Ordinarily the machine is set to run at 4500 lineal feet per hour, but much higher speeds are feasible. A variable-speed control, providing an infinite range of speeds within the ratio of 3½ to 1, is supplied as an optional extra.

The lower pan lifts out and the rolls open wide to allow easy access to all parts for cleaning.

The company also manufactures small size roller coaters for use in research laboratories and on small size production work.



Spreads a thin film of finish on panels and sheet stock.

YOUR PRODUCT MAY HAVE LINES AS BEAUTIFUL AS MISS AMERICA'S . . . . .

But What About FINISH?

When your designers create smart lines for your product . . . important as that is . . . the problem of eye-appeal is only partially solved. Finish must also do its share! Many a well proportioned, smartly designed product is tremendously handicapped in competition because of an inappropriate or unattractive finish . . . yet it is a problem that may be solved very easily.

All you have to do is write us and give the facts. Our creative studio will analyze your problem and develop a practical and eye-appealing finish that best fits your product. There is no charge to reputable firms for this service.

ROCKFORD VARNISH COMPANY

Manufacturers of Finishing Materials

ROCKFORD • ILLINOIS

NO TAMPERING WITH QUALITY

Automatic Spray Gun

Binks Mfg. Co., 3114 Carroll Ave., Chicago, Ill., now offers a new streamlined automatic spray gun, known as Thor Model No. 21, which is a radical improvement over their Thor Model No. 10 automatic gun.

Offered in connection with an improved 3-way valve for cam, hand or foot operation of the air plunger,

For use in automatic spraying.

which automatically operates the trigger of the gun, the Thor No. 21 offers new perfections in timing and spraying efficiency. Dripping and spitting have been eliminated. The positive action of the air plunger gives spraying results equal to hand-operated guns.

The New Thor No. 21 automatic spray gun is available in set-ups for all modern finishing materials, including lacquer, synthetic enamels and ceramic or vitreous materials.

Air Gun for Cleaning

A new style blow gun especially designed to meet the requirements and suggestions of daily users in the

For blowing away dust.

industrial finishing field has been announced by Decora Mfg. Co., Inc., Richmond, Calif.

The new duster has a lever trigger that gives finger-tip control of air volume. Besides serving as a handy hanging hook, the trigger is designed to operate with the natural squeeze of the hand. Streamlined in appearance, the gun has straight-line flow of the air from the hose, thus avoiding hose kinks and clogging of air channels within the body.

The long slender nozzle is particularly adaptable to cleaning out cracks, corners and other inaccessible places. A choice of a ⅛ or 5/64-in. diameter nozzle orifice is available, depending upon the user's requirements and air supply. The simple construction makes possible the replacement of the air valve seat with Schrader chuck washers, eliminating tie-ups waiting for factory parts.

Made entirely of brass, except for the sturdy pressed steel handle, the duster is finished with heavy chrome plate. The hose fitting is ¼-in. female pipe thread.

Durable Transparent Metal Coating

A new transparent protective metal coating which is said to withstand the action of sunlight, moisture and climatic changes is announced by The Fales Chemical Co., 545 Fifth Ave., New York, N. Y. It is claimed that this coating, "Seal-Cote," has been used successfully with copper, brass, bronze, steel and other metals, and has preserved their original finish even when exposed to the weather for at least six months. It has been adopted by two exhibitors at the New York World's Fair.

Prepares Zinc Surfaces for Lacquering

A new method of treating the surfaces of zinc, zinc-coated, and galvanized products before finishing them with lacquer, enamel, paint, or varnish has been developed by

Here, Color Solved the Problem

● A manufacturer of farm implements developed a new disc-harrow which was far more efficient than ordinary harrows. But unfortunately it didn't *look* much different—and it failed to sell as well as it ought to. Something had to be done.

Streamlining was attempted but the cost proved prohibitive. Finally, after many attempts to solve the problem, the manufacturer decided to modernize with *color* and called upon Glidden engineers. The directors of the Glidden Color Laboratories analyzed the problem and recommended a bright, transparent red and aluminum color treatment. Dressed in this smart, colorful attire, the harrow clicked instantly. Sales increased... it had been *color styled* to appeal to the farmer's eye.

Your problem may be entirely different, but there are many ways in which Glidden engineers can serve you, help you increase sales, cut costs and protect profits. There is no charge for this friendly Glidden service. Just ask for a visit from the Glidden man.

THE GLIDDEN COMPANY
Industrial Division • Cleveland, Ohio

GLIDDEN PAINTS
Protect your Profits

Maas & Waldstein Company, makers of industrial finishes, Newark, N. J.

As is well known, it is difficult to secure durable, strongly adhering clear or colored coatings of organic finishes on zinc, unless the finish used is selected with the greatest care, because the oxidation products of zinc combine chemically with the constituents of most finishes and destroy them.

The new M. & W. pre-treatment eliminates this difficulty. The zinc or zinc-coated products are dipped in or wiped with a solution of a compound called "Zinsol." This compound causes the formation of an alloy, consisting of zinc and another metal, to form on the surface. This alloy is chemically inert to moisture, the atmosphere, and organic finishes generally, so that it forms a stable foundation for any desired kind of finish.

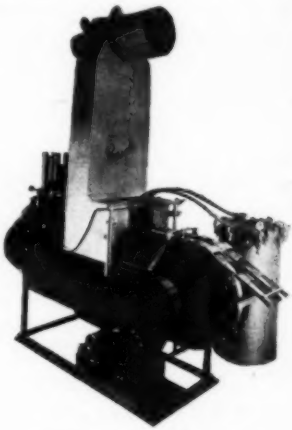
Portable Blower for Cleaning

Skilsaw, Inc., 5033 Elston Ave., Chicago, Ill., announces a 2-speed portable electric blower for blowing dust, lint and light foreign particles from surfaces and areas to be cleaned quickly. It is called the "Airmaster" and combines the utility of both a high-speed and a low-speed blower in one all-purpose tool.

This blower develops a velocity of 20,500, and 26,000 lineal feet per minute, with a capacity of both 125 and 176½-cu.ft. per minute, and a water lift (static pressure) of both 36 and 48-in. It is so designed that it can be also used with standard attachments as a suction cleaner or sprayer.

Coats Can Tops Automatically

An automatically aircoating unit (type F3634) for finishing can tops is announced by Paasche Airbrush Co., 1919 Diversey Parkway, Chicago, Ill. It automatically loads, coats and unloads 300 can tops per minute; is equipped with two automatic air-brushes, automatic off-and-on control, material tank, ventilating booth and ¼-hp. exhaust unit. The conveyor is 2-in. wide, 3-ft.4-in. high and 6½-ft. long. Dual chain and



A complete labor-saving unit.

crossbars support 112 rotating ball-bearing spindle assembly with holding fixtures for can tops.

The can tops are automatically fed to the conveyor by a specially designed automatic feeder. Can tops pass the coating station on an endless conveyor and are discharged on another conveyor which carries them to the assembly point, by which time they are dry and ready for use.

Eclipse Air Brush Co. Appoints Two Chemists

The Eclipse Air Brush Co., Inc., Newark, N. J., announces the appointment of Mr. J. J. O'Connell and Mr. Edward F. Zepp, chemists, who will devote most of their time in the field on the Eclipse Pneumix Air-Motored Agitators, which have a variety of uses in many industries.

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Keen Sharp Edges
When You Use...
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(Pressure Sensitive . . . .
Seal Without Moistening)
Scotch Masking Tapes are made with varied backings and adhesives to meet your particular masking needs . . . they will not lift under spray pressure, but give positive protection. Easily applied . . . they remove without leaving a residue . . . no after clean-up is necessary.
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SAMPLE ROLL
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MINNESOTA MINING & MFG. COMPANY
SAINT PAUL
MINNESOTA
The Desire To Serve
The Ability To Produce

Under one or more of the following U. S. Patents: Nos. [illegible]

Canadian Manufacturers and Distributors, CANADIAN-DUREX ABRASIVES, LTD., 184 Pearl St., Toronto, Can.

Stick Lacquer Patch Swells

After I have repaired a deep scratch, dent or marred place with stick shellac or stick lacquer and then sprayed it with shellac or lacquer, the patched place swells, making an unsightly uneven place in the finish. What causes this? Is there any protective coat that can be sprayed over these places to prevent this trouble? This patching is on damaged places in the finish of wood furniture.—P. E. F.

The swelling of stick shellac or lacquer is probably due to uneven application of the material, as I see no apparent cause for these materials to expand after the application of ordinary finishing material. My suggestions are: Sand the surface and apply the finishing coat. Then fill in the mars or dents by burning-in stick shellac or lacquer. After the cavity is filled (care should be taken in removing the surplus with a hot knife) I suggest using a special abrasive to remove the excess. This special abrasive is called "oil abrade." It will act only on the burned-in patch and will not affect the surrounding surface, therefore it enables a novice to turn out successful patch jobs.—F. R. BOYNTON.

In the first place it is important, when using shellac or lacquer sticks, that the burned-in material (patch) be pressed down thoroughly to eliminate any air pockets that might remain if the burning-in cement is not properly pressed into the groove. Difficulties sometimes arise because of the fact that the solvents in lacquer

Questions Answers

have a tendency to soften the burning-in cement, and when air pockets are below, these will push up the patch.

Secondly, many finishers use oils to rub down the burned-in patch, and do not remove this oil thoroughly from the surface before spraying over it with lacquer. As a result a chemical reaction takes place between the chemical and the oil. This is one of the reasons why we have developed "Abrasol" for use in rubbing down stick shellac or lacquer stick patches.

Thirdly, we recommend the use of lacquer sticks because they are manufactured of gums that are more resistant to lacquer solvents than the gums used in ordinary stick shellac. They do not have a tendency to soften when lacquer is applied over the patch.

We have experimented with bruises approximately ¾-in. in diameter and as deep as ¼-in. and have found that the lacquer stick patches hold up satisfactorily. Of course, the material in these lacquer stick patches was carefully pressed down, as mentioned in our first paragraph. We feel confident that if you will use these precautions, your difficulties will be remedied.—STAR CHEMICAL CO.

Our lacquer sticks should not give the trouble you mention. We

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AIR - MOTORED AGITATORS

- Spark-proof, Splash-proof.
- No Fire or Explosion Hazard.
- Variable Speeds — Any RPM.
- Sizes for Every Requirement.

Type AL is shown at left. This is a laboratory unit. Available in larger sizes; also with clamp mountings to fit on side of tank. Special size for 5-gallon can.

Write for Free Data Folder.

ECLIPSE AIR BRUSH CO., Inc.

Makers of Low Pressure Spray Equipment

392 Park Avenue Newark, N. J.

LOWER COSTS—BETTER WORKMANSHIP

EARN EXTRA PROFITS

Regardless of the work . . . new or refinishing . . . sanding or rubbing . . . size or shape . . . curved or flat surfaces . . . wood, metal, fabric or composition . . . wet or dry . . . with water, gasoline, compounds, etc. . . . the Sterling will do the job many times faster than is possible by hand and produce a finish that cannot be excelled.

Save up to 75% in Labor and Abrasives with

THE STERLING SPEED BLOC SANDER

Leading Manufacturers Report

FURNITURE—"With these machines we do a better job in much faster time."

CASKETS—"It really does increase production at least 50%."

RADIO—"Increased production and a much better finish."

MACHINERY—"We save 60% on labor and get a more uniform finish."

Write for Literature.

STERLING PRODUCTS CO.

303-C DONOVAN BLDG. DETROIT, MICH.

are wondering if you are using our sticks. It is true that with some grades of lacquer, this would happen to patches made with ordinary shellac sticks . . . . — UNIVERSAL SHELLAC STICK CO.

Treating Cracked Veneers on Tops

Sometimes I have tables to refinish because of cracked veneers on the tops. The veneers are crotch mahogany and butt walnut. I scrape and refinish them but the cracks break out again after a time. I doubt if glue could be forced into the tiny cracks. Is there any method of remedying this trouble?—N. D. R.

In refinishing crotch veneers it is best to fill the veneer and allow the filler plenty of time to dry. Then pad the veneer with heavy filler. To do this you place filler in a piece of loosely woven burlap and move the pad in a circular motion over the veneers to force the filler into the pores and crevices. After a thorough padding, wipe the surface clean with tow and clean rags, and allow it time to dry thoroughly. A non-shrinking filler of the Pyrax type is recommended for this work.

In exceptional cases I suggest spraying shellac over the veneer, using a shellac reduced in the proportion of three parts of alcohol to one part of shellac. Then sand the surface with No. 3/0 or No. 120 sandpaper. The sanding is important, as all the shellac must be sanded off the surface, leaving only that which remains in the cracks and pores. Repeat this operation until checks or cracks are filled flush with the surface. Apply a full wet coat each time. Then finish according to your regular schedule.—F. R. BOYNTON.

After you have cleaned and sanded your tops, refill them with paste filler colored to match the wood. This should take care of filling those checks and cracks. If not, I suggest using one of the various wood putties, which consist of powder to be mixed with water. Use a broad knife to apply this putty to all checks and cracks in the veneered tops. When it is dry, sand the surface smooth.

This mixture will take any kind of stain, or you can make a putty of whiting and shellac, and color it with stain that will mix with shellac. Make your shellac thin, as this is a very hard putty and if you use a thick shellac you will have difficulty in sanding it. Either of these putties should do an excellent job of filling the fine checks and cracks in your veneered tops.—J. C. COOPER.

Tumbling Bent Wood Handles

We are using a bent rattan handle for lanterns. This handle is made of ½-in. diameter rattan, which we boil until it becomes pliable and then we bend it over a steel form and allow it to dry.

In the boiling process some of the surface fibers of the rattan become loosened and, when the handles dry, there is a sort of fuzz sticking out all over them. We remove this by tumbling the handles in a steel drum with sawdust and small steel discs which are punchings from sheet steel. While this process does a fairly

ANOTHER BULL'S EYE

KWIK KOTING KKPS PIGMENT STAINS

They are the only pigment stains having these characteristics:

1. Reduce with Naphtha.
2. All shades of MAPLE, WALNUT, MAHOGANY, and SWEDISH MODERN.
3. Fast to Light, non-bleeding colors. May be striped or stenciled over if desired.
4. May be brushed, dipped or sprayed.
5. May be coated with sealing coat in one hour.
6. And have the lowest unit cost of any pigment stains on the market.

MARTIN VARNISH CO.

900 WEST 49TH PLACE — CHICAGO, ILLINOIS

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PERMACEL
THE PAPER MASKING TAPE

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FINE CLOTH MASKING TAPE

INDUSTRIAL
COARSE CLOTH MASKING TAPE

UTILITAPE
WATERPROOF CLOTH TAPE
IN RANGE OF COLORS

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Send us your adhesive tape problem. No obligation.

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NEW BRUNSWICK, N. J.

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BRONZE POWDERS
CHROMIUM
ALUMINUM PAINTS
ALUMINUM PASTES
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All grades and finenesses.
Special colors made to order.

Write for Sample
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ST. LOUIS, MO.

SHEL-MATIC 45

The Modern Spray Gun

Fully enclosed chassis. Feather-touch trigger . . Automatic needle release . . Exclusive straight-line valve action . . Anti-friction spray head . . Easily handled . . Simply adjusted . . Quickly, easily cleaned . . Reduces material waste . . Light, but rugged.

A. SHELBURNE COMPANY
719 SERES AVENUE, LOS ANGELES
★ Complete Automotive and Industrial Spray Equipment ★

good job, it requires a long time.

Do you know of any method whereby the smoothing of these handles could be done more rapidly, possibly by using some other material in the tumbling barrel? After tumbling, these handles are dipped in varnish and allowed to dry.

Our thought is that perhaps you could suggest some better method of tumbling to remove this surface fuzz; then in a clean tumbler, put a fixed amount of varnish together with a certain amount of handles and obtain a satisfactory finish.—E. E. Co.

We do not know if it would be possible for you to use a different process to hurry along the removal of surface fuzz from your bent handles. If a sharp fine abrasive such as sharp sand is used, there is a possibility that some of the fine particles of abrasive may become imbedded in the pores of the rattan. This might spoil the appearance of your handles; also, these imbedded particles of abrasive might become loosened later and spoil the finish on the handles.

You might find it advantageous to use some small hardwood chips or strips of sandpaper in addition to the sawdust and small steel punchings. The hardwood chips and steel punchings would have a tendency to act as a sort of abrasive agent in removing the fuzz and roughness, while the sandpaper and sawdust would have a tendency to polish the handles.

We are sending you a reprint of an article that gives some general information about barrel japanning. There are a number of materials on the market suitable for finishing small wood products by the barrel japanning

method, and we believe your lantern handles can be finished satisfactorily by this method. Some of these finishing materials will set quickly in the air. Others require baking in an oven. If a quick-drying type of air-drying finish is used, you might find that a regular tapered tumbling barrel is satisfactory for your tumble finishing, whereas the regular japanning barrel which flares at the mouth is recommended for use when it is necessary to have a little more air to help in drying the finish.

You can determine by experimentation the number of turnings, as well as the quantity of lacquer or varnish to use in each barrel load, to obtain best results in tumblings. Generally a small quantity of varnish is all that is necessary for coating a barrel of handles. — J. C. HENDERSON, President of Henderson Bros. Co.

Book of Aluminum Painting

A new illustrated booklet that gives the latest information about aluminum paint for wood priming and house painting has been published by the Aluminum Co. of America, Pittsburgh, Pa. It contains 30 pages, 5¼x8¼-in., bound between attractive heavy-paper covers and is titled "15 Years Behind the Brush." Copies are free.

Lea Mfg. Co., Distributor of Platers' Drying Material

The Lea Mfg. Co., of Waterbury, Conn., has been appointed New England distributor for Maizo, a product made by The Maizo Mills of Circleville, Ohio. Maizo is a plater's drying material, which combines the following characteristics: 1) Higher absorption properties than hardwood sawdust. 2) Free from dust. 3) Suitable for burnishing and all drying operations, including oil absorption, in place of sawdust.

"MAGIC" TACK RAGS
IMPROVE YOUR FINISH 100%

MAGIC TACK RAGS remove specks, lint and sand particles— bring out that deep, smooth luster, produce a faultless surface for white or colored finish. Why use "home made" tack rags when you can buy MAGIC TACK RAGS at trifling cost! They are tackier, do not dry— are dust-proof and spontaneous combustion proof. Packed in dozen and gross lots or more. Made only by the

Wm. A. Juergens Co.
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Toledo, Ohio, U. S. A.
If your dealer does not carry Magic Tack Rags, write us for sample.

GRAINING PLATES
bring out the
QUALITY you
have built in
YOUR PRODUCT

AMERICAN
ELECTROTYPE COMPANY
104 E. MASON ST.
MILWAUKEE, WIS.

Oven for Venetian Blind Slats

We have a customer engaged in the manufacture of Venetian blinds. The concern is interested in obtaining information, specifications and, if possible, illustrations of some type of baking oven which could be used for baking the finish on Venetian blind slats after they have been coated with a baking enamel.

We would greatly appreciate your advising us whether or not you have such information available or, if not, giving us the name and address of some manufacturer who might be familiar with this type of equipment.—L. & L. Co.

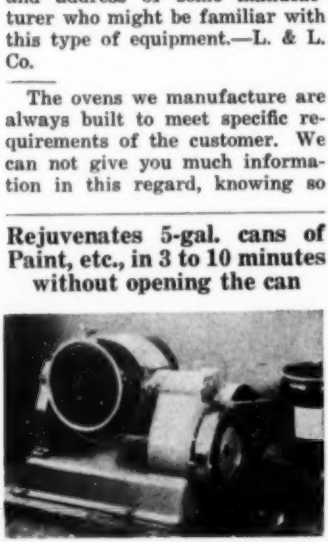
The ovens we manufacture are always built to meet specific requirements of the customer. We can not give you much information in this regard, knowing so little of your customer's requirements. Some companies bake the finish on their Venetian blinds by placing the slats on a rack and then pushing the entire rack into the oven. Others build suitable hangers and paint the slats on a movable conveyor. To design this type of oven we must know the number and size of slats to be bake-finished per hour or day, the baking temperature of the enamel to be dried, how the customer wishes to handle his product, etc. We will have one of our sales engineers call and work up the proposition . . . . —THE R. C. MAHON CO.

We have installed heating and oven equipment in a large plant in the East where metal Venetian blinds are manufactured. We also have the data and layout of the oven and heating equipment necessary for drying finishes on wood slats.

Both of these ovens are designed to handle work supported on trucks and are of the batch type. The particular type of oven required will depend largely on the method of handling the work. A proper design of oven can be supplied to do the baking efficiently and economically.

We can provide equipment suited to the particular requirements. We will be glad to have our representative call and discuss the problem in full detail.—J. O. ROSS ENGINEERING CORP.

Rejuvenates 5-gal. cans of Paint, etc., in 3 to 10 minutes without opening the can



No matter how much or how long finishing materials have settled, from lack of use, the "Miracle" will restore them to their original consistence in a few minutes. Noiseless in operation—clean to use. Also machines for ¼-pint to 50-gal. drum capacity.

Miracle Paint Rejuvenator Co., Inc.
500 Robert Street St. Paul, Minn.

J. P. Brown & Co. Move

J. P. Brown & Co., manufacturers of wood finishing materials, Chicago, Ill., announce removal of their office and factory from 341 N. Pulaski Road, to 902 Larabee St. The new telephone number is Lincoln 5344.

Cleaning Thinner

I would like to know if thinner can be cleaned right in the shop after using it. We don't use much, so it doesn't pay to send it out to be cleaned—M. M.

Yes, you can clean your thinner in your own shop, provided you install suitable equipment for the purpose. You will need a small solvent recovery still. Solvent recovery stills are profitable investments for concerns that have considerable quantities of thinners or solvents to clean. We are sending you names and addresses of a few manufacturers of solvent recovery stills.—ED.

Letters From I. F. Readers

(Continued from page 8)

permit crating and shipping the finished product.

On this product we desire a satin sheen, but wish to avoid any trace of orange peel effect. It is also necessary, at times, to touch up an edge or corner, as the original finish is knocked off or rubbed off in handling and shipping. The finish must be adaptable to patching.—D. & L. Co. (Safes, Locks).

Sheet Celluloid

Regarding the article in June 1938 issue, "Covering Surfaces with a Sheet Celluloid Finish," please advise what firm to get in touch with on this matter.—H. E. & O. Co.

Striping Tool

We have read with interest your answer to the inquiry of the L. P. Stove Co., on page 74 of February issue of INDUSTRIAL FINISHING, on striping tools. We are interested in locating a striping tool for putting a $\frac{3}{8}$-in. or $\frac{1}{2}$-in. lacquer stripe on some of our sheet metal products for code identification. Will you furnish us names of the suppliers of the flow pencil, and the flow gun with spe-

A partial list of

WALKER'S FINISHES

Fillers
Primers
Enamels
Thinners
Pencil Lacquers
Cable Lacquers
Wood Lacquers
Metal Lacquers
Silver Lacquers
Textile Lacquers
Maintenance Paints
Automotive Finishes
Machine Tool Finishes

The Emblem of Quality in Finishes

The above list is by no means complete, but we trust it will serve to give you an idea of the extent to which WALKER'S chemical staff has solved problems submitted to it.

H. V. WALKER CO.
ELIZABETH, NEW JERSEY

FINISHES To Fit the Product

New England Warehouse
BROWN & DEAN CO., Providence, R. I.

cial nozzle, so we can contact them for complete information on the suitability of their products to our requirements?—N. T. B. Co.

Pearl Essence Lacquers

Will you kindly send us the names of the leading manufacturers of pearl essence lacquers?—J. Casket Co.

Transparent Preservative Coating

We are interested in obtaining a rust preventive for bright metal surfaces, to be applied by a brush or dipping, which dries quickly in a transparent closely-adhering film resembling cellophane, except that it is more elastic and can be peeled off, leaving the metal surfaces bright and clean.

NU GLO FINISH

New Scientific Material Eliminates use of amalgamators, French and ethereal varnishes, etc., on lacquer and varnished surfaces. A perfect solid finish. Ask for complete information.

STAR CHEMICAL CO., INC.
2531 S. Crawford Ave. Chicago, Ill.

METALPREP
"USED FIRST, MAKES YOUR PAINT FINISH LAST"

Used on iron, aluminum, galvaneal, steel and galvanized iron surfaces

Use Metalprep to clean and prepare all sheet metal surfaces before painting. Removes rust and grease.

Write for Literature Today

Neilson Chemical Co.
6564 Benson St. Detroit, Mich.

Australian Representatives:
Hardie Trading Pty., Ltd., Melbourne

We would also consider using this instead of masking tape during the paint spraying operation on our machines.

If you have a product such as described, or can refer us to a source of supply, we would be pleased to hear from you.—B. C. Co. (Internal Grinders).

In the February issue of INDUSTRIAL FINISHING there was included an article written by Kelsan Products about Latex. This article interested me and I would like to communicate with the company direct. Would you please send me the address of Kelsan Products?

In the motion picture business we have many peculiar problems. One of these is keeping foliage, trees, shrubs, etc., green after they have been placed on the stages. It may be possible that the use of Latex would help us in solving this problem.—L. S. N. (Head of Scenic Dept., Motion Picture Co.).

Kelsan Products is located at St. Clair, Mich.—ED.

Pickled Pine Finish

We are writing to inquire if you can furnish us any detailed information for finishing what is known as Pickled Pine, with complete data and formulas.—W. B. Co. (Custom Design Store Fixtures).

Answers to a similar question were published in May 1938 issue of INDUSTRIAL FINISHING. Several manufacturers can supply the required finishing materials and directions for using same. We are sending you names and addresses of some of these concerns.—ED.

Pumps; Stripers

Please give us the names of manufacturers of fluid-circulating pumps and striping tools and kits.—A. A. Co. (Chairs).

Portable Sander

We are interested in securing information about hand or belt sanders for sanding filled and glazed instrument parts. Would appreciate your giving us the names of several manufacturers in our territory (Chicago) manufacturing such machines.

We would like to take this oppor-

tunity to express our appreciation for the fine articles published in INDUSTRIAL FINISHING magazine.—A. K. Co. (Plating and Japanning).

Coatings Stay Tacky

On page 5 of March issue of INDUSTRIAL FINISHING, we notice an item where a certain concern is interested in obtaining an adhesive that will remain tacky. We make several of these formulas. One is called "Dab-It." The other two are knows as "D. I. No. 1" and "D. I. Combination". . . .

Should you ever have any unusual problems on adhesives, we will be pleased to render service, as we conduct a laboratory.—Ira I. Slomon.

Silk Screen Stencils

In the February issue of INDUSTRIAL FINISHING, on page 41, we notice a paragraph regarding silk-screen plates for the transferring of designs to various articles. We would like, if possible, to obtain further information regarding this process. —M. M. Co.

Information has been furnished.—ED.

Seals Mahogany Stain

In the March 1939 issue of INDUSTRIAL FINISHING, page 7, there is an inquiry about a sealer for mahogany acid stains. We have in our line a material known as "Stainseal." This is a spirited material that may be applied by brush or spray. It successfully seals bleeding mahogany stains and stains from asphalt, creosote or similar materials.

We should be very happy to supply a sample of this material to your reader for test purposes.—Carpenter-Morton Co.

Finishing Materials Wanted

Enclosed please find clippings describing various items in which I am interested. Would you kindly contact the manufacturers of these items and have them send me literature covering same? For your information, I do consulting work of a general character, both here and abroad, and am in a position to make recommendations to my clients.—L. D. T.

Spruce Up

that

Spring Line

of

SIGNS
DISPLAYS
NOVELTIES
TOYS
MIRRORS
BOXES-CASES

Make them attractive and saleable with a finish coat of

CLAREMONT FLOCKS

COTTON - WOOL RAYON

brilliantly colored in uniform lengths — applied by spray gun they give any article "distinctive character".

Write for samples and prices.

CLAREMONT WASTE MFG. CO.

CLAREMONT, N. H.

The country's leading manufacturers

Spray Stencils

Can you supply the address of a company that makes stencils to be used for spray painting?—R. O. C.

Steel Flakes

We have a request in our Buyers' Service Dept. for the manufacturers of "stainless steel flakes, 180 to 225 mesh." Do you have any record of manufacturers of this item?—N. N. Co.

We have no information on this. —ED.

Burn-Proof Finish

Could you inform us as to where we can get a spray or paint material that will not burn—one to be used on ash trays of wood and composition casts? We know such a material is on the market but do not know where it can be obtained.—H. D. Co. (Art Dept.).

Can you advise us if there is a material on the market that can be sprayed on wood that would be "cigarette proof"; that is, one that would not soften or show the burn from a lighted cigarette? If such a material has been developed and is available, we would appreciate the name of the manufacturer.—O. R. Co. (Commercial Furniture).

We have submitted to these inquirers the names of three or four concerns that supply finishes which are claimed to be "cigarette proof." —ED.

Roller Coating; Dipping; Tumbling

Can you furnish us with a list of names of various companies who manufacture the following:

1) Roller coating machines for applying lacquer to metal.

2) Dipping machines for the same purpose.

3) Tumbling barrels also for the same purpose.

We would certainly appreciate any information you can give us in this regard.—A. & T. Co.

Checks and Cracks

F. R. Boynton's article on "Finish Checks and Cracks," beginning on page 36 of March 1939 issue of INDUSTRIAL FINISHING, is very helpful. We would like to read more on the subject; also give us some informa-

CROWN
Complete control of spray width, material flow and air ALL ON THE GUN
Fast . . . Sturdy yet light. Easily cleaned
"20"
DELIVERS PLENTY
CROWN SPRAY GUN MFG. CO.
1218 Venice Blvd., Los Angeles, Calif.
Warehouses in Principal Cities

tion on the checking of veneers; for instance, "What is and what is not to be expected of crotch veneers."—L. & O. Co.

Thank you for your expression of appreciation. Something about the treatment of crotch veneers appears in the Questions and Answers of this issue.—ED.

Exterior Finish for Stone and Marble

Do you know of anyone who can furnish finishes for exterior stone and marble? If you don't know of anyone who has tried finishes on this class of material, we would appreciate it if you will put us in touch with someone who can give us a few ideas on the subject.—O. Marble Corp.

Will some reader please submit brief information on this subject?—ED.

Stanley Chemical Co. Appoints Ohio Representative

The Stanley Chemical Co., East Berlin, Conn., announce the appointment of Mr. Evert D. Cobb as a direct factory representative in the state of Ohio. In order to cooperate effectively with manufacturers on their industrial coating problems, Mr. Cobb was given several months of intensive training at East Berlin before taking up his new work.

Fire Prevention Bulletins

Bulletin No. 74, released March 15, 1939, by the National Board of Fire Underwriters, 85 John St., New York, N. Y., calls attention to and gives directions for the servicing of automatic sprinkler systems. By way of introduction, the bulletin states that: "In recent years there have been a number of very serious fires in buildings equipped with automatic sprinklers. Many of these fires were serious because the system, or a part of it, was out of service. Knowledge of such a condition is of vital importance."

Concerns that are depending upon automatic sprinklers for fire protection should obtain copies of this bulletin—and a list of other valuable bulletins containing practical information on fire prevention.

NATURE'S OWN FINISH

MEARLMAID PEARL ESSENCE is commercially economical for all finishes on all kinds of materials and products.

Stimulate Sales

Let us show you the beautiful finish that you can develop on your product by using MEARLMAID PEARL ESSENCE. Send us a sample with an outline of your requirements.

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Industrial
FINISHING

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EDITORIAL

Applying Lacquers Hot

An important development in product finishing that is soon to be publicized consists of the application of heated lacquers to surfaces heretofore spray-coated with cold lacquers. What is accomplished by the use of heat is to thin, to spraying viscosity, a very heavy high-solids lacquer so that one coat of same will produce a film containing as much solids as several sprayed coats of cold lacquer of the usual viscosity—used in the ordinary way, that is, at the usual room temperatures. The result is a substantial saving in time and labor for the application of a finish of specified film thickness.

When all conditions are suitably balanced for the use of heated lacquers (150° to 200°F.) it is not necessary for the surfaces being sprayed to be heated above ordinary room temperatures; and the lacquer will flow out to a smooth lustrous film of uniform thickness. This system of spraying heated lacquers is adaptable to, and is used for, finishing both wood and metal products.

Circulating Paint Through Pipe Lines

Imagine, if you will, piping paint over a plant just as you would water. But that is no dream—it is being done in many plants where the volume of painting or finishing involved justifies the installation of the necessary equipment. Faster finishing, better control, improved working conditions, cleaner housekeeping, and finally lower costs are the result.

It is a long ways from the gravity bucket of the early spray finishing system to the modern paint-circulating system. Both feed paint to the spray gun, but modern manufacturing has progressed much since the days of the gravity bucket.

Automatic Spray Machines

Even though the spray system of finishing has completely outmoded older finishing methods in speed and quality of work produced, industry is today no more

satisfied with its finishing speed than it is with the speed of its other production operations. The cry today is, "faster, faster," and the producers of spray-painting and finishing equipment are answering that cry by the development of machines and equipment that are as far beyond the capacity of the hand-operated spray gun as the spray gun was beyond the brush.

Production finishing can now be done by machines in automatic operation, much the same as in other manufacturing processes. The rotary spray-finishing machine, for instance, will do as many as 3600 small, light weight articles an hour. The product to be coated or finished is loaded on one end of the machine and comes out finished at the other end. Such a machine can be set into the production line, receive the article mechanically from the last manufacturing process and discharge it into wrapping and packing machines.

Larger products in sheet, roll or panel form, with curved or flat surfaces are automatically and mechanically sprayed at a rate of 240-sq.ft. per minute in a machine of another type. These are but two more or less common finishing and coating machines. There is hardly a day passes but what some manufacturer installs a machine that has been specially designed and built to meet the particular requirements of his finishing operation . . . to speed up his production, lower his costs, increase his profit.

Grace and dignity are combined in this ensemble recently shown at the American Furniture Mart, Chicago, Ill. The maple writing table has simplified marquetry inlays. The maple chair, upholstered in chartreuse leather, is trimmed with tiny brass nail heads. The lamp has a maple base trimmed with bands of brass; also attractive natural color parchment shade.

Product Design and Finish Make or Break Sales

Your buying is predominantly influenced by the design (in form and color) and finish on products you purchase — and this applies with equal force to all of your customers and your competitors' customers. This matter is one of the chief factors confronting all manufacturers, jobbers, distributors and retailers. It concerns not only new products but the older established items that have lost their sales appeal, not because of impaired utility, but because of changing styles and refinements in competitive products.

Since it has become an acknowledged fact that the appearance of an article is a major factor in sales, the problem before every manufacturer is to see

that his products are made attractive with pleasing proportions and color, and with a desirable and durable finished surface. Really, it is just as important to employ an experienced industrial designer for making products attractive as it is to delegate a qualified architect to design a fine building.

As for the surface, finishing materials and equipment are available for producing any effect that you or your designer may specify. Manufacturers advertising in INDUSTRIAL FINISHING are eager to cooperate with you and are competent to furnish timely suggestions, valuable information and quality materials for whatever requirements you set up. Consult them at every opportunity.

Modern Spray Exhausts

Faster finishing, more spraying and new kinds of finishing materials have necessitated new and improved finishing-room exhaust systems. The water-wash spray booth has come forward to take care of these changing conditions. It cuts down the frequency of cleaning, avoids neighborhood complaints, improves working conditions, minimizes fire hazards, cuts costs and thereby increases profits.

Finishers Need More Extensive Information

The modern finishers' knowledge and skill must not stop at the application of finishing materials alone. He must be thoroughly familiar with the materials to which he applies his finishes—the woods, metals, papers, leathers, fabrics, rubber, glass and composition materials. If these surfaces are soiled with anything that may harm the finish, he must know how to clean them effectively and economically. If they come to him imperfectly smoothed, he must know how to smooth them. If they contain checks, cracks, holes or areas that will need spe-

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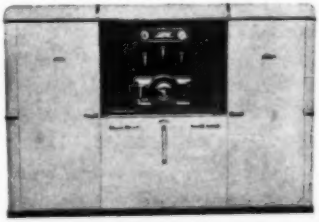
GRACEFUL CABINET



Excellent proportions, smart lines and the harmonious arrangement of operating controls, both for convenience and artistic balance, incorporate a "beauty plus utility" note in the dry cleaning cabinet designed by Onnie Mankki of Designers for Industry, Inc., Cleveland, for S. F. Bowser & Co., Inc., Fort Wayne, Ind. By simple lines and good organization, the designer has effected a definite sense of gracefulness and eye appeal in what would otherwise be just another metal cabinet.

Beauty of line is further augmented by the semi-gloss black and white synthetic enamel finish and stainless steel trim. Loading door handles, instrument panel bezel and gauge glass mountings are chrome plated brass castings. Door hinges are of the concealed type.

Of special interest mechanically is the coordination of the exterior control units in the panel with the positive controls by means of toggle link connections.

Though weighing 4000-lbs., the unit is compact and will pass through a 3x7-ft. doorway.

cial treatment, he must know what to do about it. And finally, after his finish coatings have been applied, if anything goes wrong with them such as discoloration, checking, chipping, peeling, even though it isn't his fault, he must know what to do to restore that finish. Also he must know how to repair damaged finishes, how to remove old finishes and how to refinish various surfaces.

The finisher or finishing foreman having this all-round knowledge and ability is really valuable in industry. He is in position to promptly solve those perplexing problems that continually arise and which often prove to be very expensive when his company is obliged to seek information elsewhere. Careful reading of every issue of INDUSTRIAL FINISHING will help any finisher or executive to acquire this all-round knowledge that is so essential in industry today.

Stencils; Shields; Taping

The use of spraying as a means of rapidly applying paints and finishing materials has been vastly extended and facilitated through the use of stencils, shields, masking tape and masking paste for blocking out certain areas while a different color is being sprayed. Where more than one color is to be used on an area to produce various decorative effects, such as bands, stripes, lettering, insignia, trade marks, etc., the different colors can be quickly and effectively applied by spraying.

The skillful use of stencils, shields and masks is something that modern finishers must be familiar with, and information about these products should be in the files of every concern that does product finishing. Expert and intelligent use of these facilities makes many seemingly difficult or complicated jobs easy and rapid.

Los Angeles Furniture Market June 19 to 24

The summer furniture market at Los Angeles, Calif., will be held at the L. A. Furniture Mart, 2155 E. 7th St., Los Angeles, from Monday, June 19, to Saturday, June 24, inclusive, according to Mr. A. V. MacDonald, Managing Director.

Aircraft Finishing Book

The tenth edition of Berry Bros. specifications for aircraft finishing is now ready for distribution. It contains 42 pages 8½x11-in., bound between heavy yellow paper covers. In addition to the interesting and valuable information covering all phases of modern aircraft finishing, one page in the book contains 16 color chips. Copies may be obtained by writing Berry Bros., 211 Leib Ave., Detroit, Mich.

LaVallee to Visit Representatives

Mr. G. A. LaVallee, president of The Marietta Paint & Color Co., Marietta, Ohio, sailed from New York, April 7, for an extended trip to the West Indies where he will meet with the Company's Havana and Central America representatives and distributors.

Detroit Rex Products Co. Adds Sheet Metal Division

In order to expand their services to industry so as to include not only metal cleaning but also certain production phases of finishing, the Detroit Rex Products Co., 13005 Hillview Ave., Detroit, Mich., have expanded their sheet-metal manufacturing division.

Mr. I. J. Belanger, formerly of the Belanger Fan and Oven Co., Detroit, Mich., has been appointed manager of this division.

Included under this division are the manufacturing, marketing, installation, and servicing of industrial oven

equipment, bonderite and other rust-proofing systems, alkali washers and stripping machines, and general sheet metal work such as tankage, bins, etc. This division will also have supervision of spray booth installations.

New Method of Applying Lacquer Reduces Finishing Costs

A new development in the lacquer industry is disclosed in U. S. Patent No. 2,150,096, issued March 7, 1939, to Commercial Solvents Corp., Terre Haute, Ind. The patent reveals a new lacquer technique based on the fact that by a novel method of lacquer formulation and application, worked out in Commercial Solvents' Laboratories, it is possible to apply at elevated temperatures (150° to 160°F. for example) a lacquer containing much larger proportions of solid ingredients than have ever before been used. The flow and other characteristics of lacquer so formulated and applied are equal to those of lacquers applied in the usual way. Blushing troubles are reduced to a minimum by the new system.

Although these high-solids lacquers require new and different methods of formulation, they do not require any unusual ingredients since in these new lacquers, as in the older conventional types, highest solids content and optimum flow (smoothness) are obtained with butyl acetate and Butanol, the common solvents used by the lacquer industry.

The indications are that this new technique will have a profound influence on lacquer formulation and on finishing practices in general. By the patented method, the solids content of a lacquer can be increased by 50% or more, and these high-solids lacquers can be applied in thicker liquid coats than usual, therefore the number of coats required to give any desired thickness of film may be readily reduced by as much as one-half. In other words, the equivalent of four coats of lacquer applied by the conventional method can be sprayed on in two coats when the new method is used. Furthermore, very attractive one-coat finishes are also obtained by the new system. The economies thus achieved are obvious.

It is now possible to apply a coating material having the high solids content of the so-called "synthetic resin" finishes, but without the necessity for the expensive air-conditioning and baking equipment which this latter type of finish usually requires. Because of its convenience and the marked saving which it effects, this new system of lacquer formulation and application should extend to many new fields of industrial finishing the well-known advantages of lacquer, namely, rapid drying and hardening, easy sanding and patching, and brilliance and clarity of colors.

The formulation of these high-solids lacquers and their application at well above ordinary room temperatures are being studied intensively and large-scale tests have definitely proved the feasibility of the system. This development should engage the interest of every lacquer manufacturer and user because of the economies indicated and the adaptability of both product and process of application to new uses.

V. J. Dolan Reports Improved Business After Southern Trip

Mr. V. J. Dolan of the V. J. Dolan & Co., Inc., 1830 N. Laramie Ave., Chicago, Ill., recently returned from a business and recreation trip through the south, during which time he visited some of his representatives in the southern states. He reports satisfactory business.

Mr. W. O. DuBois, chemist for the V. J. Dolan & Co., also enjoyed a month of recreation in Florida.

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Index to Advertisers

Advance Paint Co. ..... Third Cover
American Electrotype Co. 59
Atlas Powder Co. 2

Berry Brothers 45
Binks Mfg. Co. 20-21

Claremont Waste Mfg. Co. 63
Classified Advertising 70
Crown Spray Gun Mfg. Co. 64

Day & Co., James B. 39
DeVilbiss Co., The 4
Dolan & Company, V. J. 6
du Pont deNemours & Co., E. I. 40-41

Eclipse Air Brush Co. 55
Egyptian Lacquer Mfg. Co. 37

Flood & Conklin Mfg. Co. 23

Glidden Company, The 51

Hammond Chemical Co. .....
Hilo Varnish Corp. 1

Impervious Varnish Co. 64
Industrial Tape Corp. 57

Juergens Co., Wm. A. 59

Lilly Varnish Co. 33

Maas and Waldstein Co. .....
Mahon Co., The R. C. ..... Front Cover
Martin Varnish Co. 57
Mearl Corp., The 65
Minnesota Mining & Mfg. Co. 53
Miracle Paint Rejuvenator Co. 60
Mitchell-Mayer Co. 58
M. & E. Mfg. Co. 71

Neilson Chemical Co. 62

Oxford Varnish Co. .....

Paasche Airbrush Co. .....

Rockford Varnish Co. 49
Ross Engineering Corp., J. O. .....
Roxalin Flexible Lacquer Co. ..... Second Cover
Rudd Lacquer & Sealer Corp. 7

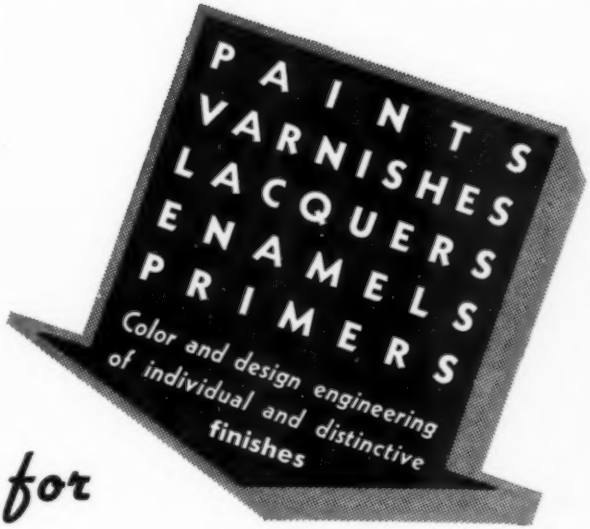
Schaefer Varnish Co. ..... Back Cover
Shelburne Company, A. 58
Sherwin-Williams Co. 34-35
Solvents Recovery Service .....
Spruance Co., Gilbert 47
Stanley Chemical Co. .....
Star Chemical Co. 62
Sterling Products Co. 56
Stille-Young Corp. 9
Sun Oil Co. 6

Universal Shellac Stick Co. .....

Varnish Products Co. 8

Walker Co., H. V. 61
Watson-Standard Co. .....

Zapon Co., The 3
Zapon-Brevolite Lacquer Co. 3



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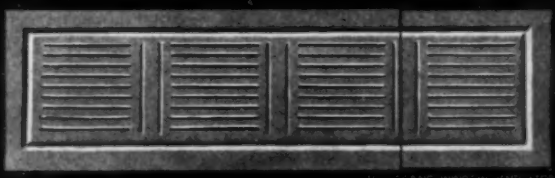

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